A STRUCTURALIST APPROACH TO THE STUDY OF THE MOSQUE

With Reference to Cairo - Egypt

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in

Architecture

By:

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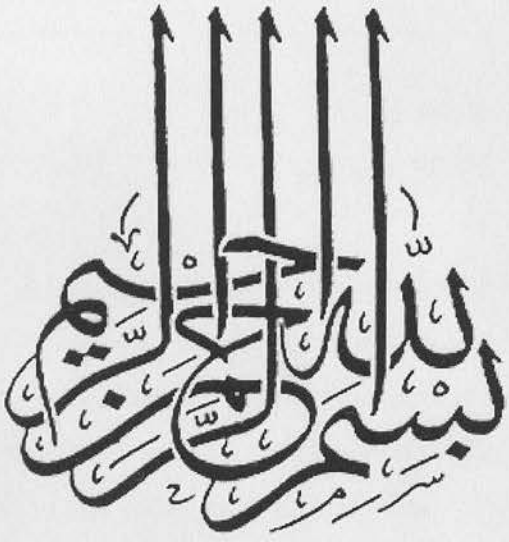

IN THE NAME OF ALLAH
THE MOST GRACIOUS, THE MOST MERCIFUL

DECLARATION

This thesis is my original work and has been composed solely by myself.
Sameh El-Feki

eca
RESEARCH

Abstract of Thesis Form

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Thesis Title

A STRUCTURALIST APPROACH TO THE STUDY OF THE MOSQUE
With Reference to Cairo – Egypt

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Abstract

The mosque plays an important role in nurturing the spiritual, intellectual and social aspects of the Muslim societies. It embraces these aspects not only as a building, but also as an institution considered by this study as a holistic system, which comprises subjective values and objective components. The mosque's responses to the ever evolving pressures facing Muslims have always been expressed through its ability to support the transformation of the social and cultural forces. The main contribution of this research is to introduce a new method of understanding the mosque and its role.

The research adopted an approach which extended the General Systems Theory to the Theory of Structuralism, being a holistic epistemology that recognises the element of time in responding to the dynamic nature of the mosque. To implement this approach, a number of structuralism concepts are utilised, e.g. transformation, synchronic/diachronic views, surface structure/deep structure and the laws of composition underlying the concept of genotype/phenotype.

Both methods of deduction and induction are used with the aim of building such understanding. The first part sets the theoretical model in two chapters. The first chapter learns from theories of Holism, General Systems Theory and Structuralism while the second introduces Islam as religion and addresses its principles and cultural values. Both chapters build the theoretical approach that is implemented to guide the research towards achieving its aims and objectives.

See reverse side for notes

The second part studies the mosque in the light of the theoretical model of part one, with particular reference to Cairo, the case study of the research. This is taking place into two chapters. The first explores into the origins of the mosque, studying its subjective and objective aspects at architectural and urban levels. The second chapter traces the transformation of these aspects within the Cairene Muslim society, through different historical eras.

The third part of this research is inductive, and is dedicated to the empirical examination. The main objective of this part is to test people's perception of the role of the Cairene mosque, in the light of the studied theories. A qualitative open-ended questionnaire is designed, distributed, collected and analysed to accomplish this goal.

The findings of the research emerge from both its theoretical and empirical aspects. Theoretically the findings are based on the philosophical discourse and Islamic principles. Empirically, the findings come from the open-ended survey. Therefore, the conclusion responded to the aim of the research in finding method of understanding the mosque and its role as an institution in nurturing all aspects of Muslim society; following its social transformation and maintaining its rules of composition. The genotype provides a set of rules controlling the reproduction of the mosque as an institution. The rules that form the genotype of the mosque relate to a hierarchy of three levels of forces underlying its designs. These are the eternal unchangeable principles, symbolic meanings and contextual transformations. These forces contribute to the genotype of the mosque to different degrees. The formulated structuralist model could be applied to other mosques elsewhere.

DEDICATION

In Memory of my Grandfather.

To all those I love

To my Great Father

Who was the initial and fundamental motivation behind the production of this work through his continuos moral and academic support.

To my Kind Mother

Who suffered while waiting for this day, and always dreamed of it.

To my Beloved Wife
and Cherished Children

(Omar and Youssef) who had to carry too many sacrifices throughout my research.

And to all my family

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First and foremost, praise to God in whom I strongly believe and depend on. By His will this thesis was made possible May His blessing and peace be upon His Prophet Mohamed.

In the next few lines I would like to express my deep thanks to all those who supported and helped me over the period which the study was conducted.

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At this point it should be made clear that this research would not have been completed without the total support of both my parents to whom this work is dedicated, especially my father who was the first to encourage me to do this Ph.D. He sustained his continual, endless support and kind attention towards my progress, facilitating a solution to every single trouble that faced me. This gratitude is not only for my father's role as a parent, but also for his role in providing me with a good example of loving and living architecture, being a hard worker and paying attention to every detail, which allowed me to subconsciously follow in his steps as an architect. I am extremely grateful to him and my mother who suffered while I was away. She sacrificed both morally and physically. Her constant concerns never made me feel left out while living in a foreign country. I owe her the spiritual encouragement which greatly motivated me to complete this thesis. I would like to extend my gratitude to my sister Rania, her husband Dr. Hatem Matar and their children Basma and Basel. Similar appreciation go to my family in law for their continuous encouragement and support. My father in law, Dr. Galal Mashhour who helped me far more than he knows and also my mother in law Mrs. Nawal Lashin. I would also like to express my thanks to my brother in law Dr. Tarek Mashhour and his family Romi, Karim and Amira. As well as my sister in law Dr. Magda Mashhour and her husband Dr. Amr Shalash and their daughter Habiba.

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PREFACE

Throughout this thesis the following conventions were used regarding Quranic Verses, Hadith, Arabic transliteration and dates.

All verses quoted from the Holy Quran in the thesis are from The Noble Qur'an, English Translation of the Meanings and Commentary, published by King Fahd Complex for the Printing of the Holy Qur'an. Al-Madinah K.S.A in the year 1417 Higri. For the Quranic citations, the Sura number is given first, followed by a colon and the verse number(s), all between brackets. For example, (The Holy Quran, 14:23-29) means that these Quranic verses are the translation obtained from the previous source from Sura 14, and the verses are 23 to 29.

All the Hadith are the translations of 'The Encyclopaedia of the Nine Books of the Hadith' a CD ROM by Sakhr Computer Software Company. The manner of writing is the book name first, followed by a dash and the reference name, all between brackets. For example, (Sahih Al-Bukhari – Sakhr, 1991) means that this Hadith is translated from the book 'Sahih Al-Bukhari' in the Sakhr CD ROM, which was published in 1991.

The system of Arabic transliteration used here does not wholly abide with one of the systems used in the literature. In an attempt to adopt the simplest way and best way possible to convey the nearest audible pronunciation, several systems were referred to, but the main reference was the transliteration system described in the International Journal of Middle Eastern Studies.

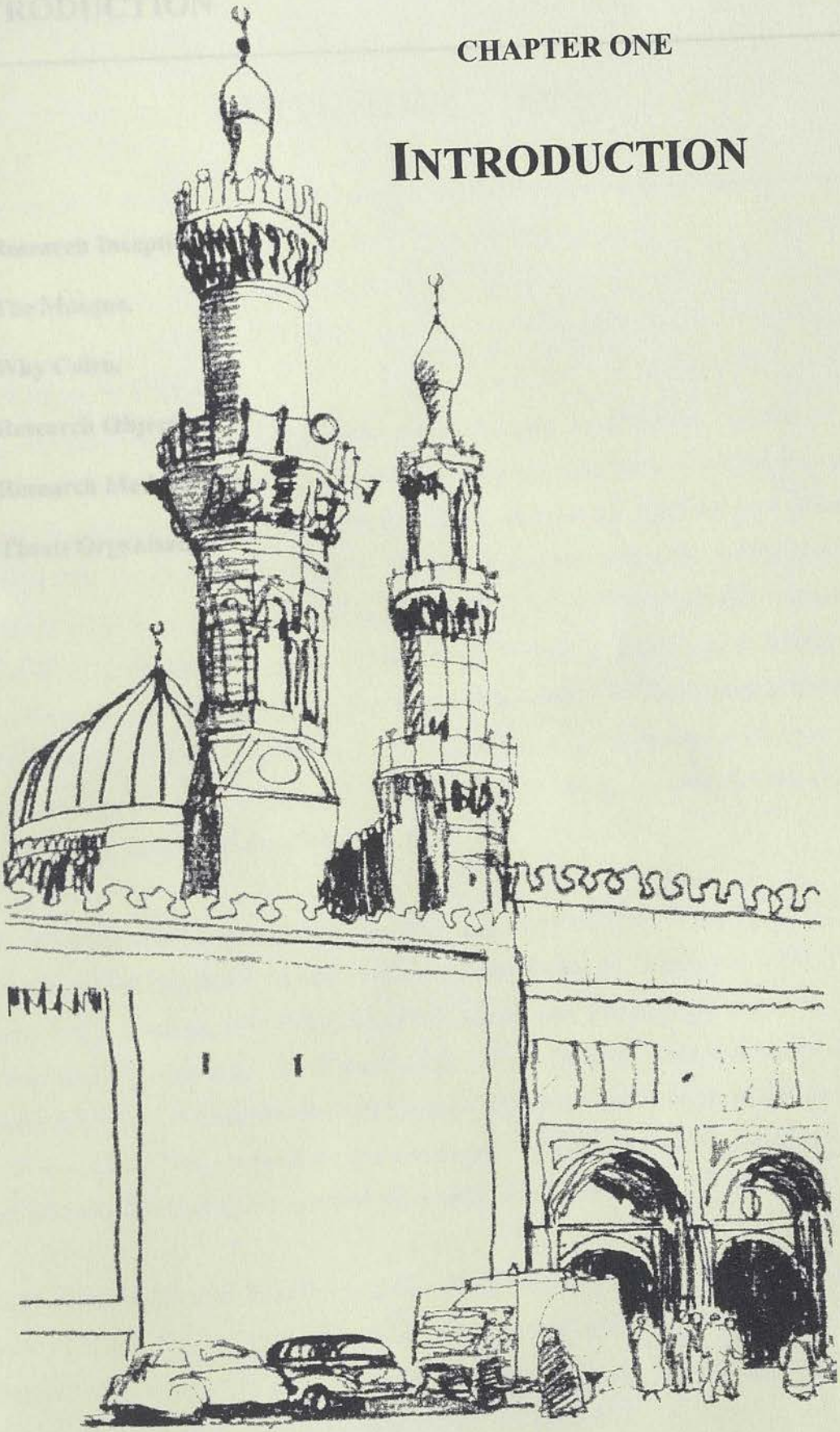
The method of dating followed in this thesis incorporates the Gregorian Calendar date AD between brackets. Higri dates were not mentioned throughout the text so as not to interrupt the concentration of the reader. However, at the end of the thesis there are two appendices describing the Higri date, one gives the chronology of major Islamic buildings and the other concerns the Islamic Calendar including a table to convert Higri dates into Gregorian dates. It is important to note that the Muslim era began in (622

AD), the year the Prophet Mohamed migrated from Makkah to Al-Madina. The Muslim year is lunar, it contains twelve months of twenty nine or thirty days. And since it is approximately eleven days shorter than the Gregorian solar year, there is no fixed correspondence between them.

At last it is to be noted that the sketches on the chapters' covers are derived from the work of Jim Antoniou's 'Historic Cairo: A Walk through the Islamic City'. Published by the American University in Cairo Press in the year 1998.

CHAPTER ONE

INTRODUCTION



1

INTRODUCTION

CHAPTER ONE

INTRODUCTION

1.1 Research Inception

This research is not a problem-oriented thesis focusing on a specific problem of a specific case study. As the mosque evolves out of a complex set of variables that are unique to each regional and social setting, it is not intended to simply produce general design guidelines. The main focus of the research is on relevant theories propounded in the literature. It is an attempt to **open up a new discourse on the general framework of philosophical attitudes out of which the study of the mosque as a system of transformation has emerged, bringing together a number of theories in a holistic form to create a unified framework. This framework is developed to define the structuralist model and is intended to accommodate any phenomenon, concept or problem with its specific authentic structure.**

It is important to establish a clear understanding of 'structuralism' in the way it is dealt with throughout this thesis. This is achieved by introducing the origins from which this theory has evolved as well as its associated approaches. Theories are discussed, and connections between them identified, in order to facilitate an understanding of such theory. Therefore, Holism and General Systems Theory are discussed as an introduction to structuralism. After studying these theories with their philosophical and architectural implications, it will be possible to test them against the mosque.

This study was initiated from the need to address the mosque as an expression of unity within Muslim society. **Unity is one of the main principles of Islam**, with many spiritual implications. The notion of **unity correlates with the western philosophy of holism**. Thus, the study is intended to introduce the mosque in a more holistic way. It is

a part of society, which is a holistic entity.

The mosque is not a purely religious theological institution, it has a social role and maintains norms and traditions for the wellbeing of society. This encourages exploration into the different characteristics and roles of the mosque as an extremely important phenomenon in the life of Muslim culture and society. It became a centre for political, social, cultural, intellectual, educational and juridical activities and the basis of the Muslim society. In this regard Khan (1990) claims that the mosque became the most important building, and a landmark of any Muslim society. Its symbolic and functional meanings allow the mosque go far beyond its regional boundaries, resulting in its prestigious and honourable status. In conclusion, the mosque has deep roots in all aspects of the Muslim society, obligating a connection to all relevant aspects and the adoption of a holistic approach.

Among Muslims there have been different images and interpretations of the mosque ranging from its being simply a place for prayer, to having other religious roles, or for education, or social use etc. Therefore, the thesis is intended to create an awareness of the actual role of the mosque in Muslim society, as an institution and not merely a building.

Holism is an ontology that is lived, it cannot be applied as an epistemology. **Structuralism is an epistemology strongly associated with holism** and can be applied as a tool for the study of any holistic phenomenon. **Structuralism originated from General Systems Theory**, leading the research to follow the same path, applying the study of General Systems Theory, through which the study faced difficulty due to the **lack of a time parameter in General Systems Theory**. This emphasises the significance of structuralism as an associated epistemology to holism. The idea of holism in structuralism construes that wholeness is the transformation of knowledge through time in a given structure. Hence, structure depends on this process of transformation and the transformational process itself is a key concept in understanding the whole and how it works. Accordingly, it could be claimed that the most significant properties of structuralism are its holistic nature and flexible dynamic evolution.

The present **research employs a diachronic methodology to understand the process**

of transformation. This necessitates studying the continuity of its evolution, with the suggestion of going back to genesis and history, as well as analysing the present status. This implies adopting an understanding of the mosque based on the past, present and future, which correlates with the theory of structuralism as a holistic concept including all subjective and objective features for fostering personal and societal wellbeing. In this regard Hasan Fathy said "Learning from the past, providing solutions to the future", Smuts also argued "the pull of the future is almost as much upon it as the push of the past, and both are essential to the character, functions and activities which it displays in the present" (Smuts, 1987 in Quintela, 1999, p.60).

In addition to the time parameter, structuralism has raised a number of other concepts involved in this study of the mosque and help in the understanding of the mosque as a structure. These concepts are the subjectivities and objectivities; order and hierarchy; surface structure and deep structure; self-regulation and finally, the rules of composing a structure. The laws of composition are responsible for producing structure in the future and can be identified as the genotype.

The concept of genotype / phenotype comes from biology. Though, they will not be dealt with as biological entities. But the analogy of this is in the cognitive mind, being a body of information that endows such a meaning to the role of the mosque towards the society. Other authors, such as Bill Hillier, used it in an architectural or urban context, examining domestic spaces. This research elaborates this idea further. Putting emphasis on the fact **that one should go beyond the phenomenological approach of the mosque towards a more profound approach: the deep structure of the mosque,** which will help in finding out what is genuine and what is not.

A field survey is used to confirm the relevance of these theories to the Cairene mosque. In this survey, the Muslim citizens of Cairo responded to **open-ended interviews and questionnaires**, freely expressing their views on the role of the mosque in the society and its transformation. The survey analysis showed that the structuralist approach is strongly grounded in Egyptian people's thoughts and that the mosque has hidden layers of socio-cultural, emotional and symbolic meanings that act as motivations in its transformation over time.

At last, the conclusion of this research integrates the results of the fieldwork with the theoretical findings of the study to identify a new method of approaching and understanding the mosque, and to establish a set of recommendations towards sustaining the role of the mosque in Muslim society.

1.2 The Mosque

The mosque is a place where Muslims can perform their prayers, one of the five pillars of Islam and the supreme act of submission to God. It should be oriented towards *Quibla*, which is the direction of the Holy *Kaaba* in Makkah. The primary reason for building mosques is to glorify God, neither the builder nor the donator. As it is a purified place the Great Name of Allah is raised during prayers. That is why the mosque is sometimes called the house of God.

The characteristically monolithic nature of Islam, which is the religion of Divine unity, orientates the lives of individuals and societies, to the worship of the One God and to leave no domain, in the development of human activities, exempt from the authority of Divine law. This implies that mosques, being houses of worship in Islam, suffuse political, social, cultural and even economic institutions of Muslim cities and their operations. In other words, **the role of the mosque is not merely religious** as in the worship of God in congregational prayers five times a day, but it has other roles. It is also an active organisation in the body of the intellectual faith and an institutional revival of the Islamic culture. In addition to the social role that unites Muslims within the community and strengthens their social relationships, there is a hierarchy of other roles that are concerned with the everyday life of the society. The mosque used to be the centre of the city where Muslims gathered to discuss various aspects of life. It also used to **fulfil the society's needs in terms of medication facilities, administration centres, courts of law and educational institutions** (Khashoggi, 1987).

Within this context, the mosque, being located at the centre of the city, governed the whole urban region surrounding it and was the dominant architectural feature. This gives a clear image of how the mosque influenced society and was in turn influenced by it.

Nowadays, the role of the mosque has changed, due to the complexity of the society,

including a government with all its varied organisations. There is the court as the house of the judicial system, schools institutions and universities for the education system, and different ministries, which have taken over the role of the mosque. However, the mosque still maintains it's strong socio-cultural role. For instance, some mosques have attached libraries, lecture halls, classrooms, medication facilities (Infirmaries), social welfare, orphan care, vocational guidance projects and a multi purpose hall rented by people for weddings, funerals and other social events. These traits are also adopted in the west and in non Muslim countries, where mosques serve as complexes to fulfil the socio-religious needs of the community, represented mainly by education, libraries, food preparation, family functions and women's activities (Holod, 1997).

In addition the mosque plays an important role in fighting terrorism, fundamentalism and deviant ideas about Islam. This is not merely a religious role but also one with some political dimensions. This battle against fundamentalism is implemented through all means, mainly by widening people's perspectives about Islam, broadening their minds, and creating awareness about what is right and wrong within the context of the eternal rules of Islam.

In conclusion, the existing research has recognised that the mosque has played and will continue to play a very important role in the life of society, one that has allowed society to develop and transform. It empowers moral, religious symbolic and cultural references amongst individuals and societies. The mosque has adopted this not as a building, as is the prevailing vision now, but as an institution. This institution has a system just like every institution. This system is more holistic as it is related to every individual in the society, and it accepts and adopts itself to knowledge, science, development, social events ... etc.

The above discussion clarifies the significance of studying the mosque as an institution. This is summarised saying that the mosque has a significant role in the life of society. **It has accompanied the transformation of Muslim society across historical eras and it has maintained many of it's roles as an institution**. In addition the mosque is the Islamic building that most precisely reflects the impact of the different forces, together with the different local architectural traditions, that formed Islamic architecture.

Searching the origins of the word mosque, one can find that it is obtained from the French word "mosque'e", which is originally received from the Spanish word "mezquita". This Spanish word is the translation of the Arabic word "*masjid*" which is derived from the verb *sajad*, which means to prostrate for the sake of worshipping (as being one of the actions taking place during prayer) (Jairazbhoy, 1972).

Hence, the *masjid* is the building where Muslims perform their prayers that exists in every Muslim community, even if it is only a small room. Sometimes, it was associated with other buildings, either religious or secular, such as the caravanserais, mausoleums, palaces, *ribats*, and *madrasas*.

Apart from the three sacred mosques **Al-Masjid Al-Haram** in Makkah, **Al-Haram Al-Nabawi** (the Mosque of the Prophet – peace be upon him) in Al-Madina and **Al-Aqsa Mosque** in Jerusalem (see chapter three), there are three types of mosques varying from the largest the *Jamie*, to the smallest the *Musalla* (or *Zawya)* passing by the *Masjid*.

The *Jamie* was derived from the verb *Jama'a,* that means to assemble. The *Jamie* is a large-scale mosque commonly with rich decorations. It has to accommodate thousands of people, mainly for Friday prayers. The *Masjid* is mainly a prayer hall. It is a mosque that serves a local neighbourhood where the regular five daily prayers are offered. It should be centred in the neighbourhood or located within a short distance from homes and places of business. However, the term *masjid* is generally used in Arabic to refer to any place of prayer and the differentiation (*Jamie*, *masjid* and *musalla*) has lost its importance now. Finally, the *Musalla* (or *Zawya*) indicates a place for the daily prayer, disregarding the area. It could be a room in any building, an office building, a shopping mall, university etc. The term *Musalla* is originally derived from the word *Salat* which is an Arabic term that means prayer.

1.3 Why Cairo

In spite of the shared fundamental similarities, issues and problems amongst Muslim cities, being affected by similar consequences of the social, political and economical transformations; they have individual differences in some aspects. The following discussion reveals the reasons of the selection of Cairo in the present research.

The location of Cairo has major significance, and has affected its historical development as an extraordinary Islamic capital. Cairo has achieved its importance as the capital of Egypt over a thousand years (since the first Arab settlement), and has a special central location in the Country. Throughout its history Egypt has been a target for foreign invaders. This is as a result of its strategic geographic location in the heart of the Middle East at the junction of the Mediterranean Sea and the Red Sea, controlling the two continents Egypt connects, Africa and Asia Minor. The consequences of this strategic location are reflected by its commercial, economical, political, military, cultural, architectural and religious aspects. On the commercial level, Egypt, through a canal between the Red Sea and the Nile, acted as a link between Rome and India, between the Mediterranean Sea and Arabia. This allowed to sail across the canal then the desert, next downstream to Alexandria, into the Mediterranean, and across to Rome **(Figure 1-1)**. Obviously this had a great influence on Egypt's economy, and consequently upon Cairo, being on the major trade route between the east and the west (Antoniou, 1998).

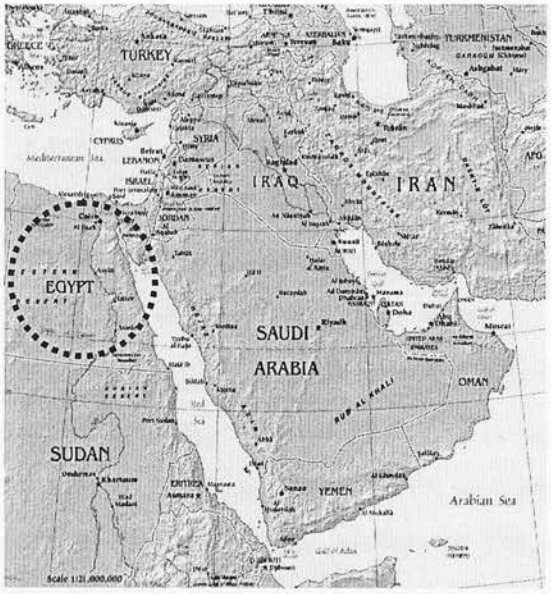


Figure (1-1) A map showing location of Egypt in the Middle East. Source (UT Library Online, 2003).

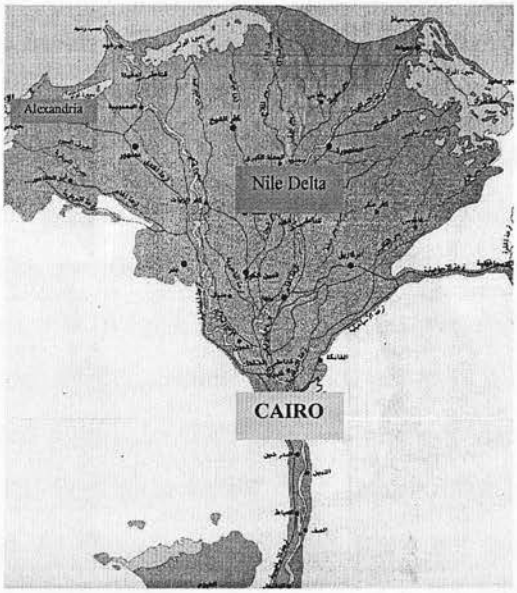


Figure (1-2) A map showing location of Cairo in the Nile Delta. Source (Fayed et al., 1987). English tags by the researcher.

At the national level, Cairo divides Egypt into two major sub-regions; Upper Egypt to Cairo's south, and Lower Egypt to the north. The stream of the Nile is divided into two channels creating the fertile Delta that lies between Cairo and the Mediterranean coast **(Figure 1-2)**. In this way Cairo controls the route to the Delta (Abu-Lughod, 1971).

In addition to its commercial role, Cairo had many Nile branches and streams leading to different places in Egypt. This is why military invaders coming through the Nile, had to pass by Cairo. These invaders traditionally set up their military headquarters there, adding to Cairo's strategic value (ibid.).

Such a strategic location attracted many civilisations to Cairo, making it one of the major symbolic, cultural and religious centres. Cairo expressed political authority, artistic creativity and culture, spirituality and religious learning, education, industry and entertainment. Cairo has numerous Pharaonic, Greek, Roman, Coptic and Islamic monuments (Steele, 1994).

Having Cairo as a capital city for the Islamic State for so long, and through so many reigns and dynasties, resulted in diversity within the evolution and transformation of the mosque. Through these varied influences Cairo represents a number of cities collectively rather than merely one city (Ibrahim, S. 1984). This provides a wider scope for studying the mosques' evolution, particularly in relation to these different transitions.

Additional religious significance is attached to Egypt, and consequently Cairo, being a place where many prophets, messengers and holy people have lived. It is the birth place of Prophet Moses during the time of the Pharaohs. Prophet Yusuf (Joseph) also lived in Egypt as well as his father Jacob, Abraham, his wife Hajar and Maria, Prophet Mohamed's wife as well as many others (Omar, 1999). Jesus and Mary escaped the persecution in Jerusalem by fleeing to Egypt and staying in Old Cairo. There are also the tombs and mausoleums of the members of the Prophet's family *(Ahl Al-Bayt)*, there are Al-Sayyida Nafisa, Al-Sayyida Zeinab and Al-Hussein. In addition there are the tombs of the scholars *ulama* and *awliya*, such as that of the famous jurist Al-Imam Al-Shafi'i as well as many Sufi saints, which number in hundreds (Gabr, 1992). The mention of Egypt a number of times in the Holy Quran adds to this religious value (Omar, 1999). For example,

> *"Then when they came in before Yusuf (Joseph), he took his parents to himself, and said: 'Enter Egypt, if Allah wills, in security.'"*
>
> (The Holy Quran, 12:99)

Prophet Mohamed (pbuh) also said: "The Blessing was divided into ten divisions, nine

of them were in Egypt and one in the towns" (Omar, 1999). Having the first and largest Islamic University of Al-Azhar is another religious reference shaping the image people have of Cairo. It is clear how the religious references associated with Cairo can influence the choice of studying a phenomenon of such religious nature, like the mosque.

Finally, Cairo is the home city of the author of this research, which provides a better understanding and analysis of its context, being based upon his own life experiences and knowledge, together with other insights and literature.

1.4 Research Objectives

As mentioned earlier, the research attempts to open up a new way of dealing with the mosque, a phenomenon which is not static, to create a new interpretation or a new discourse. Therefore, the study focuses on providing a deeper understanding that is more holistic and supports social transformation. This approach emerges from structuralism, its philosophy and methodologies and moves toward the application of these ideas in the architecture of the mosque. This emphasises that the mosque has extended beyond being just a building, and maintains a role contained in the notion of genotype.

The above ideas have led to the formation of a number of study objectives. The central concern of the research relates to the transformation of the role of the mosque in Muslim society and its reflection on the domains of architecture and urbanism. The research puts forward the following objectives in response to these concerns.

- Understanding 'structuralism' and its different concepts and properties relevant to the area of study.
- Knowing about Islam as a religion, principles and culture. Religion that is concerned both with secular and spiritual domains. Basic principles such as unity, oneness, equality, community etc. Culture, that is lived, transformed and relevant to today.
- Understanding the correlation between the primary concept of the mosque and the eternal idea of Islam from one side, with the needs of the society from the other.
- Creating awareness about the eternal role of the mosque to the Muslim society.
- Understanding the mosque in the light of the introduced theories. Searching into it's connotational and denotational characteristics, to reveal as much of its hidden

meaning and motivations as possible. Exploring it's genotype on the urban and architectural level.

- Knowing about the Cairene context to be able to set the transformation of the Cairene society throughout different historical eras, highlighting different forces that have impact upon such society.
- Following the transformation of the mosque within the transformation of the Cairene society, throughout different eras starting from the first Islamic settlement until today, with respect to surface and deeper levels.
- Confirming the relevance and applicability of the proposed approach to the actual context in Cairo.
- Introducing recommendations for sustaining the role of the mosque to the Muslim society.

1.5 Research Methodology

The methodology undertaken in this research stems from its objectives. Its main aim is to introduce a structuralist approach to the study of the mosque, with reference to Cairo. To do so, it first builds a **theoretical discourse**, introducing a number of theories from the literature that are complementary to each other, preparing an approach to structuralism as the main umbrella under which the research is undertaken. Then a background study about **Islam as a religion, principles and culture** is to take place. This will also shed light on the importance of prayer in Islam, hence the significance of the mosque and its place to Muslims. In addition, it investigates the sources of the Islamic legislation system, what is accepted and what is not, to facilitate an understanding the forthcoming chapters. Afterwards, a **deductive analysis of the mosque** will be conducted in the light of the theoretical discourse, with particular reference to Cairo. The methodology employs the concepts and properties of the theory of structuralism. It constitutes a study of the mosque including a hierarchy of physical aspects and subjective socio-cultural motivations on both the architectural and urban domains, following the transformation of the mosque with reference to the Cairene society. This transformational study begins from the historical mosques in successive Islamic periods till it reaches the contemporary mosque. Furthermore, the study includes the start point of such structure, as the simplest form at it's beginning, later expanding and becoming more complex. This is found in the Prophet's mosque in Al-Madina. It has the laws of composition that allow for the expansion of its complexity. It has the

potential to transform itself from being just a building into being an institution. Therefore, the Prophet's mosque will be addressed in the light of the central theme of the research.

Then an **inductive analysis** is conducted to examine the relevance of the developed theoretical framework to the actual Cairene context. To do this, an open-ended survey is designed, distributed and collected. Afterwards, in order to interpret the responses and reach an understanding of people's perception of the mosque's role in Cairo qualitative analyses were applied in the light of the theory of structuralism.

The research conclusion integrates the results of the fieldwork with the theoretical findings of the study to distil the main message regarding the role of the mosque as an institution and its implications on the architectural and urban domains.

It should be noted that due to time limitations, and because the focus of this thesis is on the introduction of a new way of understanding, this study of the mosque is not inclusive. The present research focuses on a certain model, describes the various aspects of structuralism and examines the mosque from a structuralist perspective. A number of examples have been chosen to demonstrate this.

1.6 Thesis Organisation

This thesis is organised into three parts. **Part one** reviews the relevant literature in two chapters. The first of them builds the theoretical framework introducing the ontology of holism. It then details the concept of 'Systemness' explaining two relevant theories, 'General systems Theory' and the theory of 'Structuralism', by making reference to the relevant literature, and presenting a number of their properties and concepts and their implications on the mosque. The second chapter is dedicated to the exploration of Islam's general, religious, philosophical and legislative backgrounds.

Part two studies the mosque deductively in the light of the theoretical model. It focuses on studying the mosque as a structure and examines the application of the concepts of structuralism to the mosque. It contains two chapters, chapter four investigates the genotype of the mosque throughout its different layers of meanings and motivations, which lead to its current phenotype, in terms of its architectural and urban contexts.

Chapter five presents the diachronic study of the mosque, which embodies its architecture and its location in terms of the spatial structure of the city and the transformation of Muslim society in Cairo. The transformational study incorporates the Mosque of the Prophet (pbuh) in Al-Madina, referring to it as the beginning of the structure of the mosque as well as the primary genotype model. This considers the transformation of the initial conception over history to fulfil the needs of the time.

The third part of the thesis is dedicated to the fieldwork. The aim of this part of the study is to generate direct feedback concerning the relevance of the studied theories to the Cairene mosque. In more specific terms it aims to investigate the image of the mosque in the minds the Cairene citizens. An open-ended survey was designed and qualitatively analysed and interpreted, This revealed that the theoretical findings are strongly grounded in Cairene people's perception.

Finally, chapter seven contains the conclusions, findings and recommendations of the research. This summarises the research findings, as well as the implications for the future role of the mosque and suggests proposals for further research in this area.

The following **(Figure 1-3)** graphically represents this structure.

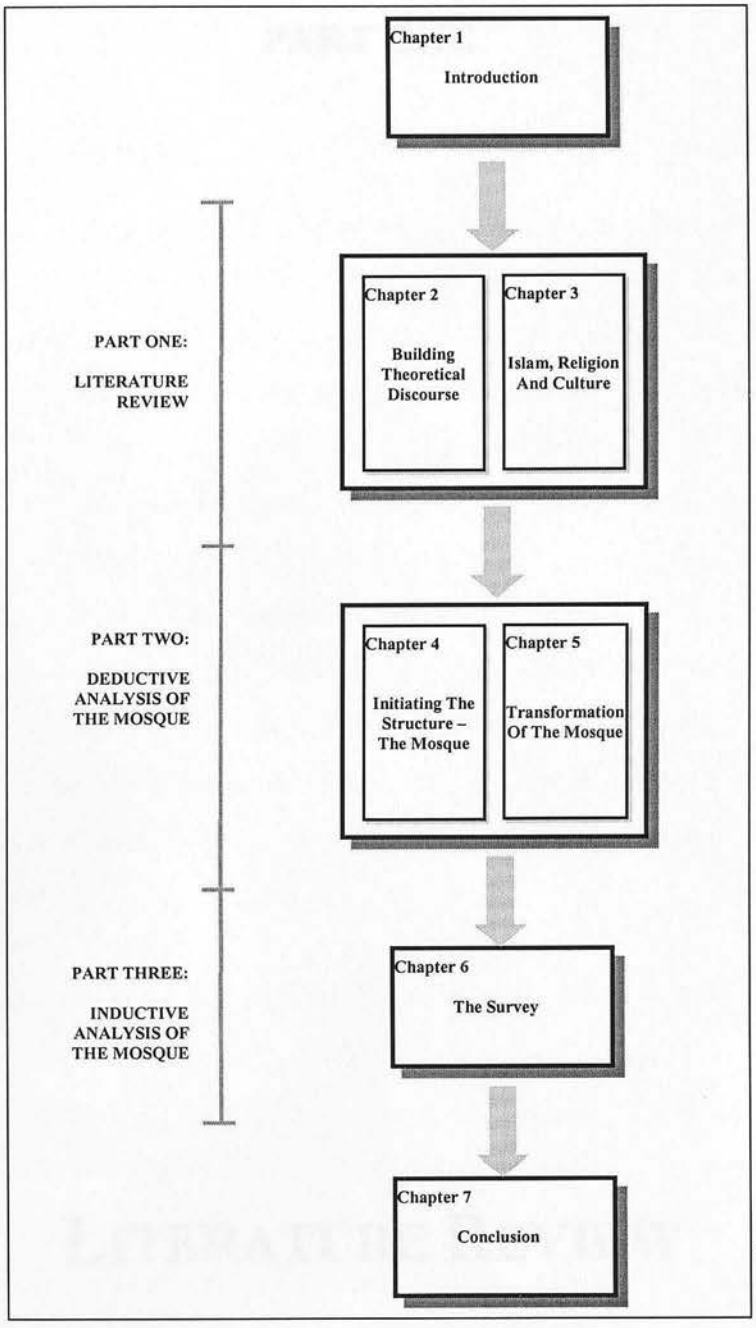


Figure (1-3) Research Organisation

PART ONE

LITERATURE REVIEW

INTRODUCTION TO PART ONE

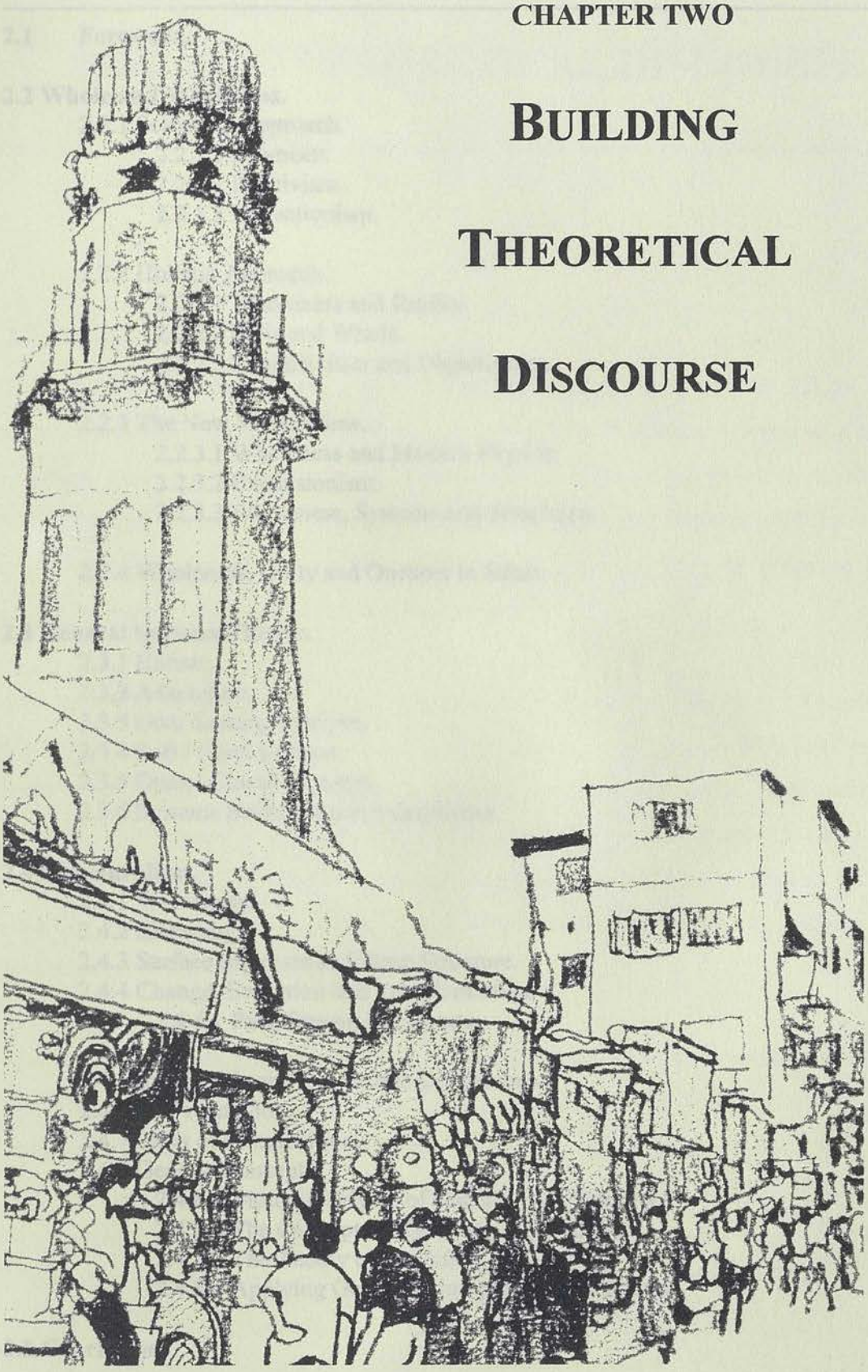
This part of the thesis is comprised of two chapters. The objective of this part is to introduce the theoretical discourse of a number of philosophies that form the basis for the current study. Islam will also be discussed as a religion, principles, culture and the source of legislation under which the mosque, as an institution, serves society. This is undertaken to familiarise the reader with the background to the study, and to facilitate an understanding of the mosque as a system of transformation.

The first chapter builds the theoretical discourse, starting with the theoretical interpretation of the **holistic approach** as the fundamental concept upon which the present research is based. Next **'General Systems Theory'** is presented as the origin of the Theory of **Structuralism** under which the mosque is studied. The Theory of Structuralism is introduced in terms of its concepts and properties relevant to the current area of study.

The second chapter introduces **Islam**. This chapter explores the principles and philosophy of Islam. Then the pillars of Islam are briefly explained, focusing on prayers and the mosque, discussing its different levels of understanding. Finally, the sources of Islamic law will be discussed, highlighting their implications for the built environment. Because basically, Islam is a way of living that has a particular perspective of life, it generates a unique character in the individual and distinct culture for society grounded on Islamic values and ideals. This implies that Islam is a law for both religious and secular life. Hence, Islam involves every aspect of a Muslim's life.

CHAPTER TWO

BUILDING THEORETICAL DISCOURSE



2

BUILDING THEORETICAL DISCOURSE

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CHAPTER TWO

BUILDING THEORETICAL DISCOURSE

2.1 Forward

The objective of this chapter is to introduce the concepts and theories behind the suggested approach to the mosque as an institution. It is an attempt to open up a new discourse about a general framework of philosophical attitudes, out of which the study of the mosque as a system of transformation has emerged. It also helps to trace the roots of the phenomenon of the mosque within this context, as well as preparing the groundwork for understanding the following chapters.

This will be achieved by presenting a conceptual and theoretical framework upon which the research is built, bringing together a number of theories in a holistic form to create a unified framework for studying the principles of the mosque. This framework is intended to accommodate any phenomenon, concept or problem to its specific authentic structure. These theories are to be used as tools and it is not the intention to give a detailed discussion of the theories themselves. This focuses on the theoretical development of the study of the mosque.

This research was inspired by the need to address the mosque as an expression of unity of the society. Unity is an Islamic contribution, being very strong in Islamic philosophy and in spirituality. The notion of unity is one of the main principles of Islam, which is, in a sense, an expression to the western philosophy of holism. The study was driven by the intention to introduce the mosque in a more holistic way, rather than through a fragmented understanding of the mosque. Misinterpretation of the meaning of the mosque at the social, cultural and religious levels as well as the architectural has resulted in the loss of much of its role in society.

The mosque is a phenomenon that is part of a holistic entity, the society. It has deep roots in all aspects of the Muslim society and the best way to understand this phenomenon is to address its connection to these various aspects, which necessitates the adoption of a holistic approach. This chapter starts by offering a theoretical interpretation of the holistic approach; acting as an umbrella and the fundamental concept upon which the study was developed, and rejecting the fragmented view.

In the study of the mosque, it is noted that holism is lived, is seen as an ontology[1] that addresses the mosque as part of, and united with its community, environment, and even the whole world, all as one unified entity. That is why holism could not be applied as an epistemology[2]. So, how can it be used to address and understand the mosque? Structuralism is an epistemology that is strongly linked to holism and could be applied as a tool for studying the mosque holistically.

However, structuralism was originated from General Systems Theory and it was found to be essential that the same path of structuralism be followed. In other words, the current research relates General Systems Theory to the mosque. There is a value in seeing the mosque as a system, but due to the lack of a time parameter in General Systems Theory, that was not sufficient, as will be elaborated in the next few lines. As such, structuralism was found to be more appropriate.

General Systems Theory is introduced through both its divisions, the local environment and instrumental, using its concepts as tools to understand the mosque, and to find out whether it is a local environment or instrumental. The study finds that this theory cannot identify which type of system applies to the mosque. The difficulty arises from the different ways the mosque was treated during different eras, in other words it is lacking the factor of time, thus preventing appropriate understanding.

[1] Ontology is a branch of philosophy concerned with the nature of being or existence. It refers to the 20th century German philosopher Martin Heidegger who distinguished between an ontological enquiry (an enquiry into Being) and an ontic enquiry (an enquiry into a specific kind of entity) (Hutchinson Encyclopedia, 1999).

[2] Epistemology is another branch of philosophy, which examines the nature of knowledge and seeks to determine the limits of human understanding. It includes issues about how knowledge is derived and how

The need for another tool of understanding that recognises system and time, leads to Structuralism, which does not only recognise holism, but, as a methodology, has been identified as the best tool to examine phenomena in a holistic way (Barati, 1997). Structuralism addresses a phenomenon through the study of its evolution and transformation. Therefore, the present research adopts the structuralist point of view in studying the mosque. This includes synchronic and diachronic approaches as crucial in understanding the mosque's transformation.

Structuralism raises a number of notions related to the parameter of time. This indicates that any phenomenon would better be understood through the diachronic analysis. This should be done by studying all objective and subjective aspects, corresponding to holism. In other words, it could be said that the idea of holism in structuralism was developed to explain that wholeness is the transformation of knowledge through time in a given structure. Hence, the concept of structure, basically, depends on this process of transformation and that the transformational process itself is a key concept in understanding the whole and how it works. However, these notions and their relationships with the mosque will be discussed throughout the chapter.

There are certain laws of composition, which define the mosque as a mosque in different times. Those rules are responsible for producing mosques in the future, and could be identified as the Genotype. Thus, genetic studies involve evolution (i.e. time) – such involvement of the time parameter clearly has a parallel in Structuralism. On another level the Genotype / Phenotype distinction corresponds to the concepts of Surface structure / Deep structure, which are elaborated in more details throughout this chapter. So, the following part of this chapter reviews the backgrounds of the Genotype / Phenotype distinction, then it discusses the relevance of this approach to architecture in general and particularly to the architecture of the mosque.

All these theories are complementary to one another. It is not that General Systems Theory negates holism, nor is it that structuralism nullifies General Systems Theory, nor that genetics is an alternative to these. Each of them introduces an input to the understanding of the mosque. It is the evolution of the study that makes them

it is to be validated and tested (Hutchinson Encyclopedia, 1999).

complement one another. They all contribute towards building the theoretical discourse of the study. Each builds certain blocks of the model.

2.2 Whole and Wholeness

"holism has been pervasive throughout history" (Ferguson, 1975, p. 28)

Aristotle is attributed with stating that 'the whole is more than the sum of the parts'. In this regard Mathews (1994) mentions that something more than a summation of parts takes place during the formation of wholes.

Hence the notion of wholeness is studied to clarify its relation to both the classical and new scientific approaches, as well as connecting it to Islamic principles in general and the mosque in particular.

The traditional built environment[3] and vernacular architecture[4] are based on people - environment relationships, they basically depend on the information collected through interactions between people with their culture from one side and from nature on the other side. The continuity of this process creates a holistic relationship between people and their environment. Later in Europe, the Renaissance witnessed great progress in science and engineering etc., where the idea of standardisation of all the sciences (including the humanities and social sciences) dominated intellectual understanding and social development (Ash, 1987). In other words, it imposed a new understanding of the world that ignored the cultural values of other societies developed under totally different worldviews and environments, and having a negative impact on these communities (Barati, 1997). This was reflected on the built environment and partially affected the mosque. In conclusion, there was a clear contradiction between scientific global trends and the existence of cultures whose inherent attributes of diversity discourages the intentions of science and universal knowledge.

A thorough look at most of the Arab Countries in general and Egypt in particular,

[3] Built environment is the interrelation between people and their physical surroundings without any natural physical surrounding (Nabih, 1999).
[4] Vernacular architecture is the one that is locally defined, grows naturally through local norms and is not organised by the state (Nabih, 1999).

reveals the conflict between the imported scientific methodologies and the heritage of indigenous cultural beliefs. In this regard Feyerabend (1988) claims that science is one tool among many others that people have invented to cope with their surroundings. Yet one consequence of adopting these scientific approaches, is that it was thought to be quite valid to discard everything that could not be explained or quantified in scientific terms.

This discussion does not aim to discredit scientific theories or developments. What should be taken into consideration are the influences of ideas and theories that were imported and imposed upon a culture that thought and behaved in a totally different way.

2.2.1 Scientific Approach

The phenomenon of globalisation was the expected result of the influence of these scientific approaches that expanded from physics and mechanics to other principles of humanities and sociology. The scientific approach was spread by industrialisation, modernisation and the application of the scientific methodologies, associated with the dependence of these scientific thoughts on generalisation and the inclination towards reductionism and atomism. Ignoring all aspects of whole and wholeness kept the major problem of the people / environment relationship unsolved, despite the progress that had taken place in these scientific tendencies in the past few centuries. This is blamed on one very important factor, that the identity and the mental well-being of any society cannot be supported by a universally standardised and abstracted environment.

Barati (1997) classified the scientific approach into three doctrines including Atomism, Positivism and Reductionism. This research, therefore, reviews in brief these doctrines and their consequences on the people / environment interrelationship. Furthermore, the discussion of these doctrines provides support for the necessity to adopt the holistic approach.

2.2.1.1 Atomism

Atomism is an attempt to analyse the world by division. It is the attempt to divide what

is really indivisible. Atomism as a methodological doctrine became one of the great paradigms of reductionism, which strongly affects all sciences. It results in fragmentation within the environment where it was not initially disintegrated neither in the perceptual or physical senses, leading to a misunderstanding of the process of environmental phenomena. Atomism has created many difficulties, particularly in environmental and social concerns as well as humanities. In this regard, it is suggested that the principle of individualism is the same as the principle of atomism but raised to social theory (Barati, 1997).

Feyerabend, (1988) argues that a person's religion or metaphysics, must not have any connection with his scientific activity. This implies that the nature of scientific facts is independent of opinion, belief and cultural background.

This is considered to be the first dualism between subject and object, which led to an obvious confusion especially in societies who did not perceive objective-subjective discrimination until recently. This confusion is highlighted by Bohm (1980) as he argues that recently fragmentation became common in every individual not merely throughout society, which led to a general confusion of the mind, creating an endless series of problems to our clarity of perception. Consequently, it prevented us from sorting out most of them.

2.2.1.2 Positivism

Positivism is an examination of the world based on experimentation and what can be perceived through basic senses. Positivism aims to achieve the unification of science across all disciplines (Barati, 1997). Positivists deny all value to metaphysics and philosophy stating that they have no theoretical and cognitive content. They concentrate on explanations, that would lead to certain facts based on the cause-effect relationship, basically identified by logical and mathematical techniques (Sack, 1980). Consequently, the cultural, environmental and subjective issues are either objectified or ignored.

2.2.1.3 Reductionism

According to the reductionistic doctrine the study of all human subjects such as

sociology, psychology, and even biology are physical subjects and physical processes. It is the reduction of the dimensions of the studied phenomenon to a manageable size (Barati, 1997).

The outcome of all these classical scientific tendencies, is the raising of new theories in environmental issues, which disconnected people, culture, and the built environment from each other. The result of these kinds of ideas, was creation of fragmented environments all over the world.

2.2.2 Holistic Approach

On the other hand, the holistic approach adopted a contrary theme, which highly considers the significance of subjective values in understanding objective phenomena. The following discussion addresses this approach.

2.2.2.1 Wholeness and Reality

The consequence of the atomistic approach was the separation of humankind from reality and the creation of a fragmented environment. David Bohm in his book 'Wholeness and the Implicate Order' states that wholeness is about being, even if people find it difficult to understand. It is suggested that human beings cannot have a practical way of thinking about reality, unless they have a holistic view of the universe. Since people's actions, resulting from illusory perception, are created by fragmentary ways of thinking, so a re-evaluation of the notion of fragmentary thinking is really needed, being conscious of it and its consequences. Hence we might have the chance to bring it to an end. Then our attitude to reality may be holistic, and so will be the response (Bohm, 1980).

In this regard Teymur (1982) argues that there is no such separation in reality, and there is no classification and no boundaries in nature. It is the human mind that imposes such system of classification upon the world and makes it act in a way that is separate or binary.

Eventually, reality is not just a set of objects, but a process of change, transformation

and an unending movement, that will never be static or complete (Bohm, 1980).

Regarding the built environment, reality is not only the physical environment, but in addition contains the people who use it, the thoughts they have about it and the knowledge they create about it through time.

2.2.2.2 Parts and Whole

Addressing the issue of 'Whole' Smuts (1987) claims that

> *"It is the parts in a definite structural arrangement and with mutual activities that constitute the whole"*. (Smuts, 1987. Quoted by Quintela, 1999, p. 80)

Bertalanffy (1971) believes that if people look at merely the smallest part of the world in isolation, they will not be able to understand its complex relationship to the matrix with which it forms a total spatial and hierarchic system. Hence, it is essential to consider things not as isolated parts, but to view things as being interconnected, and to view systems as a whole.

Within this context it is important to realise the negative consequence of the ability of people to separate themselves from the environment, as well as dividing things. The consequence of this is a destructive disintegration of people from their cultures and societies. This is interpreted by Barati (1997) as the idea that the whole has been lost in the search for the identity of its parts.

"The notion that all these fragments are separately existent is evidently an illusion, and this illusion cannot do other than lead to endless conflict and confusion. Indeed, the attempt to live according to the notion that the fragments are really separate is, in essence, what has led to the growing series of extremely urgent crises that is confronting us today. It created, for instance, an overall environment that is neither physically nor mentally healthy for most of the people who have to live in it. Individually there has developed a widespread feeling of helplessness and despair, in the face of what seems to be an overwhelming mass of disparate social forces who are caught up in it" (Bohm, 1980, pp.1-2).

Language exemplifies this approach. As a word becomes meaningful only when it is a part of a sentence and through its location within the whole language. Consequently, the real identity, here, is the structure of the language as a whole. Fragmented words obtain their meanings only if they represent the real whole. Likewise, any phenomenon in the environment, as a whole, is meaningful only if it is studied within its context. So what is a part of a whole, if examined independently, becomes meaningless, or at least its meaning is totally different and unreal (Quintela, 1999).

Nonetheless, people need to separate things or put artificial boundaries between things, in order to understand them, taking in consideration that one should be aware of this imaginary separation, because the holistic approach rejects the ideology of separating the phenomena into parts without paying attention to the whole. As **the relationships of different parts to the whole are as important as the parts themselves**.

Although an organism consists of parts, it is more than the sum of its parts, and if these parts are removed from each other the organism is destroyed, and no reassembling of these parts would reproduce the initial constitution, because these parts are associated with each other. According to Quintela (1999), in the case of recombining parts, two possible kinds of error might take place: in the initial analysis there might be something lost so that, in the rebuilding process, not all of the original elements will be present, but something else, which will end with a different situation from the original one. This may be called 'error analysis'. In the second possibility, after investigating the isolated elements, one might be able to look upon them as the natural factors of the situation, and upon the whole as a product brought about by them. Accordingly, the analytical elements become the actual effective entities, where as the explained situation would be their resultant.

In conclusion, **no element in the environment has its meaning as an independent isolated entity**. The significance of the parts, examined independently, is never the same as when they are embedded in the whole, because everything becomes meaningful only if it can be seen in its contextual situation as interconnected to the whole.

Therefore, people have to change their perception of the world from the fragmentary nature, which is an illusion, to the totality as a dynamic process. In this regard Bohm (1980) mentioned that we have to enable ourselves to bring thought, perception and action into an orderly single movement, so that the analysis within separate individual parts would be meaningless.

2.2.2.3 Subjectivities and Objectivities

At every stage the operation of mind needs an inclusive understanding of what is generally known; not only in formal, logical and mathematical terms, but also in images, feelings and poetic usage of language (Bohm, 1980).

Human life comprises many layers of objective and subjective aspects, which are embedded in each other, connected to each other in a very complex structure.

Unlike the objective issues, subjective issues have been completely ignored, hence the relationship between both of them has also been ignored. According to Bertalanffy (1971) the human world is not merely objective (made of physical things) but is also subjective, very real, that is about the symbols, values, social entities, and cultures embedded in a cosmic order.

"In terms of wholeness and oneness, objectivities and subjectivities are in a transformational process" (Barati, 1997, p. 230). Yet holism is not about making distinction between subjective and objective issues.

Colours represent a good example to express this. The colour green, besides its physical attributes, has subjective value in Islamic culture in that it becomes part of people's structure of thought that contains a mixture of social and religious dimensions associated with Paradise as a result of changes and transformation in people's perception and cultural interpretation of this colour (Masaud, 1996). Similarly, the colour red has physical attributes and subjective values that vary from culture to culture, as it means something for communism that differs from its association with hell and fire in other cultures. Hence, the subjective dimension is always there, but might differ from culture to culture and from person to person.

2.2.3 The New World View

The holistic approach has been developed in many new ways of looking at the world, like modern physics, general system theory, expansionism, and many other philosophies. The following study discusses a group of them.

2.2.3.1 Wholeness and Modern Physics

Unlike the classical scientific approach, modern theories in physics do not need to divide the whole into parts to understand the world. "Relativity and quantum theory agree, in that both imply the need to look on the world as an undivided whole, all parts of the universe, including the observer and his instruments, merge into one totality. In this totality, the atomistic form of insight is a simplification and an abstraction, valid only in some limited context" (Bohm 1980, p.11). This complies with other Eastern cultures and religions such as Islam, Hinduism, and Buddhism.

The universe is not seen as a machine composed of a multitude of objects, but as one indivisible, dynamic whole whose parts are essentially interrelated and can be understood only as patterns of a cosmic process (Capra, 1983).

Referring to quantum theory, Bohm (1980, p.11), suggests that the flow of mind and matter is only known where mind and matter are not divisible substances. "Rather, they are different aspects of one whole and unbroken movement. In this way, we are able to look on all aspects of existence as not divided from each other, and thus we can bring to an end the fragmentation implicit in the current attitude towards the atomic point of view, which leads us to divide everything from everything in a thoroughgoing way". Hence, quantum theory emphasises the crucial interconnectedness of the universe, showing that it is not possible to deconstruct the world into independently existing small units.

2.2.3.2 Expansionism

The doctrine of expansionism deals with everything as a part of larger whole rather than as wholes to be taken apart (Ackoff, 1974)

Expansionism highlights the synthetic mode of thought much as reductionism highlighted the analytic mode. In the analytic mode the whole is described through describing its parts, unlike synthetic thought, in which everything is described as a part of larger system, considering the significance of its role in that larger system. For instance, the synthetic method, explains universities in terms of their role in the educational system of which they are part, not by explaining the performance of colleges and departments which are their parts (Islami, 1998).

2.2.3.3 Wholeness, Systems and Structures

Systems and structures are both strongly linked to wholeness, the thing that will be elaborated in more details later in this chapter. In general, a whole is not a matter of assembling a number of isolated independent units but is the outcome of the laws of systematic composition, that control the transformation of systems. However, structure is a system of transformation and is not an aggregation of elements, but a manifestation that describes a set of relations between things controlled by some overriding formative law (Hillier & Leaman, 1972-73).

The composition of wholes is of a totally different order than the addition to aggregation of parts. In aggregates it is important to add the parts together; in a system it is important to arrange the parts together (Mathews, 1994).

It is very important to note that the sum of the criteria applied to performance of the parts of a system is hardly equal to the criteria applied to that of the whole. For example, it is hard to imagine a car that its assembled parts taken from different types of cars. They would not work together properly, even if the parts could be assembled. As a matter of fact, the performance of a system is based on how well the parts fit and work together, not only on how well each performs independently (Islami, 1998).

2.2.4 Wholeness, Unity and Oneness in Islam

Ancient societies of the East are known to have always been religious. The most significant feature of these societies is the holistic interpretation of the world. To

suppose that everything in the universe has a sole creator, is the main foundation for perceiving it as a **whole unity**. This also applies to Islam[5], as it is argued that existence has always been considered as a unified whole, namely, *Wahdat El-Wujood*, which means 'the unity of existence'. That is referred to one God who is the creator of everything and nothing can exist or happen beyond His will and power. In other words, Islam, as with other Eastern philosophies, connects wholeness and oneness with religious ideologies (Barati, 1997). Mathews emphasises this stating that "In the Eastern view the world is considered as a unity in which the appearances of plurality and diversity are no more than ripples on the surface of an oceanic continuum. The most important characteristic of the Eastern world view - one could almost say the essence of it - is the awareness of the unity and mutual interrelation of all things and events, the experience of all phenomena in the world as manifestations of basic oneness" (Mathews, 1994, p. 8).

Accordingly, the cosmos indicates the divine principle and so does man, and man is himself closely associated with the cosmos. He is the microcosm and, similar to the cosmos, reflects the meta-cosmic reality (Nasr, 1971). In other words, there is no such division between people and the universe, where people themselves, as a part of the universe reflect the divine. Therefore, the universe and its container, being associated to God, are a unique sacred united whole.

The issue of the unity of the universe was also raised by Capra, saying, "Although various schools of Eastern mysticism differ in many details, they all emphasise the basic unity of the universe which is the central feature of their teachings. The highest aim for their followers is to become aware of the unity and mutual interrelation of all things, to transcend the notion of an isolated individual self and to identify themselves with the ultimate reality" (Capra 1983, p.29). One of the major schools of Eastern mysticism was related to the teachings and principles of Islam, the grounds of which are oneness, wholeness, and unity.

Initially, Islam strongly emphasised wholeness and the unity of the world. Hence to find

[5] In this regard it should be stated that Islam is not a religion for the East and the Eastern people only. It is a religion for all people all over the world. However, it was associated with the Eastern philosophies having started in the East, particularly, in the Arabian Peninsula.

out how people perceive the external world, there is a necessity to know how Islam as an ideology interprets the world. "Islam leads to that essential knowledge which integrates our being, which makes us know what we are and be what we know, or in other words integrates knowledge and being in the ultimate unitive vision of Reality" (Nasr, 1968, p.22).

Wholeness, unity and Oneness, are the basis of all principles and laws in Islam. Wholeness has always existed and remains in the nature of things. Unity is the Islamic monotheism, which is based upon belief and is further supported by *Ebada* (preaching). On another level, and in accordance to Islamic doctrine, there is nothing but God, His will, and His power. Islam, as a religion, is a way of unity and totality. Its primary doctrine is identified as ***Al-Tawhid***, (Oneness). Oneness has three bearings that are: Oneness of God, that there is only one God for the whole universe, Who is its Creator, Planner, Organiser, Sustainer, etc., and that is Allah. Secondly, the Oneness of the Worship of God, that nobody at all deserves or has the right to be worshipped but Allah. Thirdly, the Oneness of the Names and Qualities of Allah, that He has to be named or qualified only by the names and qualities He or His Messenger named or qualified Him. In addition, nobody at all can be named or qualified with the Names or the Qualifications of Allah. Finally, we should believe in all the qualities of Allah, which He stated in the Quran or by His Messenger without ignoring, changing or twisting their meaning, nor should we compare or resemble them to any of the created things. All these aspects are contained in the meaning of the wording 'there is no God but Allah' (Al-Hilali & Khan, 1996).

Islam also recognises that God did not send diverse truths through His several prophets but different expressions and forms of the same vital truth of unity (Nasr, 1966). In such a philosophy there is a unified explanation of history along with the unification of the world and environment, which should include the human being. Accordingly, in this holistic worldview, people, nature, and man-made elements, together with their subjective values, are all perceived as the consequence of the will of God, and as His expression.

Furthermore, it should be noted that the doctrine in Islam deals with the revelation by

aid of fundamental elements, which clarifies how the relation between God and man should be. **God is the Absolute and man is the relative** (Nasr, 1996).

In addition, and according to Islam one can and must be in himself a unity, an image of the Creator and **His representative (*caliph*) on earth**. The family is, in a sense, a unity; it is a society within a society. People, family and society are cast consistent with the idea of unity of which there are many adaptations (Barati, 1997).

Islamic Philosophy belongs to a unified sight to interrelate between all regions of knowledge. *Hikma* (wisdom) is the gnosis where faith and reason holistically meet and come to a harmonious solution (Nasr, 1967). During Islamic history the principal person was the *hakim* (wisest). He was the one who settled the unity of sciences to transmit them clearly to the students.

The notion of unity is also emphasised in the five pillars of Islam. It is, originally, evoked through equality, that all people feel they are equal to each other in their rights and duties, which will automatically create the sense of unity between them and unify the whole society into one strong body. Yet, and in regard to prayers in particular, being significant pillar, as will be discussed in chapter three, and the most relevant pillar to the subject of the research, it should be stated that prayer (Al-*Salat)* is the rhythmic repetition of spirits, which integrates the Muslim into the way of realisation and continuation. It is like the most vital process of life, the beating of the heart.

Generally, in Muslim societies oneness and wholeness dominate not only their spirituality but also their daily social life, which has an implication on their architecture. Explaining the discourse of the relationship between Islam and architecture through a holistic perspective, it should be realised that Islam emphasises the notion of unity that all elements together create an architectural form, including space, shape, light, colour, and matter, rejecting sharp distinction between secular and sacred architecture (Nasr, 1971). On another level, there has been a transformation of subjectivities into objectivities and vice versa, found in Islamic architecture and urbanisation. For example, in modern Western architecture, facades reflect the social status of the owner of the house, basically from the different used elements such as materials, decorations,

windows, statues, columns, coloured glasses, etc., unlike the traditional Islamic cities, where there is nothing observable that gives an idea about the economic status of the owner. This manner creates an order of integrating sameness, as well as providing feelings of security due to the fact that rich and poor people live beside each other, permitting sustainable interrelationships connecting people through their relationship with the environment (Barati, 1997).

According to the above discussion, it is realised that holism is lived and should not be considered as a totally metaphysical notion and this is where the need of an epistemological tool arises. General Systems Theory is one of the modern scientific movements that support this notion, approving that wholeness is an integral part of the systems approach. Therefore, in the following section the study sheds light on General Systems Theory, testing its applicability to the mosque as an institution that is the reflection of so many factors identified by religious, social, cultural, political and economical aspects and their interrelationships.

2.3 General Systems Theory

The concept of Systemness[6] is represented by many theories such as General Systems Theory and Structuralism. The basic concept of system sciences, in general, is to help us to understand the living organism, mental functions, psychiatric disorders and social organisations.

Hillier & Leaman (1972-73, p. 37), defined a system as "a set of elements together with their relations". They also claim that, scientifically, a system is some complex consisting of entities of lesser order, forming (in some sense) regular relationships. There are no non-reducible simple objects, so there is nothing that could not be described as a system. General Systems Theory does not merely state that everything is a system, but also indicates what kind of system it is. Furthermore, Barghjelveh (1998), based upon previous works, advocated that the system is an analytical tool of solving problems of organised complexity. Within this context Boulding (1956, p. 197) mentioned that

[6] the systemic approach was expanded to include many disciplines, such as mathematics, biophysics, biology, geography, psychiatry, management science, education and social sciences (Islami, 1998).

> *"General Systems Theory is the skeleton of science in the sense that it aims to provide a framework or structure of systems on which to hang the flesh and blood of particular disciplines and particular subject matters in an orderly and coherent collection of knowledge."* Boulding (1956, p. 197)

Nabih (1999) argued that General Systems Theory became known in engineering in 1940s in the writing of A.D. Hall in 'Definitions of Systems, General Systems'. Then it was re-introduced by Ludwig von Bertalanffy (1971), achieving a deeper understanding of a natural phenomenon, and improving the ability to form a model according to the objectives of man made systems. In other words the concept of a system introduced a new interpretation of the universe and the scientific explanation in physics. Before that, the universe was seen as independent portions of information that were studied separately as unique entities.

According to Checkland (1981) the idea of General Systems Theory is based upon two basic principles: emergence and hierarchy on one side; and communication and control on the other side. The first is to do with understanding the hierarchical layers of a phenomenon, in an attempt to deal with problems of complexity in a holistic methodology. In fact, organised complexity became the main concern of systems, bearing in mind that the general model of organised complexity is the existence of a hierarchy of levels. Each level of the hierarchy has emergent and non-emergent qualities to the higher level, where the emergent qualities are fundamental to the higher level, while the non-emergent ones are meaningless to such levels.

The concept of communication and control is recognised as existing in all living systems, as well as man made systems[7]. Living organisms must have a system of communication and control in order to survive. Basically, communication implies that there is information being transferred. Information is transmitted to the brain by human senses through the neural system. Acting on information means that there is a mechanism of control identified in the human body's neural network, that is responsible for sending information to organs to enable them to take action. This mechanism of control enables the brain to take care of the rest of the human body's fundamental

[7] Communication and control is much more clear in the man made systems such as machines. Where a small device called the controller is found, and is responsible for regulating the operation of machines, which emphasise the significance of that part to the system.

functions. On the other hand information is transferred to the next generation through DNA. If an organism were not able to act on this information, its communication would be obsolete (Nabih, 1999).

Hillier & Leaman (1972-73) concluded from previous experiences that the concept of system was considered a framework in General Systems Theory for both scientific theory and environmental design. It could be explained as a school of thought within the environmental disciplines. Furthermore, they applied the systems concept in urban design and planning. In this regard Masaud (1996) advocates that buildings and cities are considered to be systems that include a number of components and their relationships, getting use of this application on explaining a number of environmental phenomena and architectural patterns synchronically. On another hand Nabih (1999) claims that General Systems Theory could be used in the design process in general, and particularly in large scale projects characterised by complex networks. General Systems Theory helps to model the process of design, as well as defining various stages and procedures needed to produce a design. These stages might include objective definition, data gathering and the assessment of different design alternatives. Whereas for project implementation, it is used in project management, controlling the time, procedure, finance schedule and materials arrival on site for the overall construction of the project.

Generally, the built environment is shaped by two systems that are the social or community system and the instrumental system. The social system is related to cultural norms and physical needs, and is a part of a larger system that is the local environmental system, which, is basically a system, and people who populate it perform a crucial role. This conception of the local environment has a strong effect on the built form in general and the mosque specifically. Hence, the local environment includes natural and man made in addition to social aspects. The instrumental systems, on the other hand, are set down by architects, planners and decision-makers to deal with the complexities of the urban environment. Theses systems are taken to associate methodologies used to comply with the specific goals of the system designer. Instrumental systems are set up in order to lay down a procedural framework or to support decision-making (Nabih, 1999).

General systems theory has developed a number of concepts to study systems. In the

following section, a number of these concepts will be used as tools to enhance the understanding of the nature of the mosque as a system and to identify its tendency towards being either an instrumental or a local environmental system.

2.3.1 Holism

As stated earlier, the whole is constituted of parts having mutual activities and in a certain structural organisation (Quintela, 1999).

Holism was identified by systems theory into the modern era. The ability to look at a given phenomenon in a holistic way is considered one of the most important advantages of the systemic approach, unlike the classical approach that dealt with only a particular part of a problem (Barati, 1997).

Holism is a natural characteristic of the local environmental system. It is adopted by the internal structure of a social system throughout its processes. This is facilitated by the power of the human mind in understanding all elements of the environment in which it inhabits. Within this context Levi-Strauss, argues that social interaction is a system in which "all aspects are linked to one another" (Levi-Strauss quoted by Luchinger 1981, p. 16). This link is believed to be a factual representation of holism in social systems.

The mosque has so many subjective meanings represented in various sentimental and symbolic values, that are the result of the interrelation of the political, social, religious, educational and cultural aspects. These subjective values are reflected on the objective phenomena of the mosque expressed in its architectural and urban aspects. The mosque is, therefore, a whole that involves both the subjective aspects and the objective phenomena and should be seen within this context.

However, holism cannot be identified within instrumental systems, mainly because they concentrate on abstractions from reality. Nevertheless, when attempting to apply holism, the result is not an accurate representation of reality, but a reflection of the views of the systems designer.

2.3.2 Adaptation

OSG (1981, p. 17) defined the adaptive system as "a system with the capacity to modify its internal state or structure in response to changes in environmental demands or opportunities". The ability to interact with the environment means that such a system is able to adapt. The more adaptive the system is the more complex it is.

Biological evolution and social systems can be used as an example of adaptive systems. The mosque, as a social system, has proved to be adaptive throughout different historical eras. For example the first mosque built in Egypt was the mosque of Amr Ibn Al-A'as (641 AD) and adopted the design of the Mosque of the Prophet (pbuh) in Al-Madina, and included a courtyard. On the other hand the contemporary Egyptian mosque does not have any courtyards because of the introduction of modern technologies, like fans and air conditioners. The mosque adapted the environmental needs and this was reflected on its overall design. Another example is the *madrasa* mosque, which was first found by Salah Al-Din Al-Ayyubi, as a place to teach Egyptians the theology of Islam. It was developed to include four spaces to teach the four Sunni forms. This resulted in a new architectural form, emerging from the people's need at that time, emphasising the fact that the mosque is always in a state of interaction with the environment and the society (see chapter five).

Adaptation is not evident in an instrumental system, because the instrumental system is not in a state of interaction with the direct physical environment. However, the change of an instrumental system in response to public pressure might be interpreted as adaptation, although it is usually not in the formal structure of the system (Nabih, 1999).

2.3.3 Goal Seeking Systems

Generally a system should have at least one goal. The number of goals increases as the system becomes more complex. Secondary goals might need to be met in order to reach a primary goal. For example the human ecological system achieves the maximum possible secondary goals, such as food, shelter, and health, while the primary goal is the improvement of the quality of life. So, a hierarchy of goals can be identified subject to the complexity of the system.

In regard to the local environmental system, one can state that the community is nothing except a group of individuals that belong to it and every person struggles to fulfil his / her main needs. Hence, the social system will struggle to fulfil the needs of the community. To fulfil this number of needs means to fulfil one fundamental goal, improving the quality of life of those populating that community (Nabih, 1999).

The mosque fulfils many of societies' needs. Historically, old mosques used to include a prayer area (religious goal), a school (educational goal), an infirmary (health goal), a court house (judicial goal), and ruling the city was mainly done from the mosque (political goal) etc. The contemporary mosque beside the prayer hall (religious goal) includes a place for education, an infirmary, and the social events hall (social goals). All these goals could be included under the umbrella of the social goal. This notion clarifies the nature of the mosque as a goal-seeking system. This is seen in the multiplicity of goals, which serve the social goal. One may also say that social goal, judicial goal, political goal etc. all serve the goal of the Muslim community well-being. This also, in a way, emphasises holism; in other words the mosque included most of the society needs, even if they were constructed in different spaces, but they were all built into one complex.

In general, instrumental systems are more directed towards planning systems. The goal of planning systems, in most cases, is to achieve a specific development policy within financial limitations. This goal is comprised of time of execution, finance, total cost, economic development, provision of employment, provision of housing, improving public services etc (Nabih, 1999).

2.3.4 Soft / Hard Systems

Soft systems have a personal not a technical attitude, and do not precisely represent the original situation because of the involvement of emotional reactions and personal values. On the other hand, hard systems are precise, quantitative and well defined such as mechanical or electronic assemblies and some highly routinised human activities (Rapoport, 1970). Checkland (1971), confirmed the characteristics of both systems stating that soft systems, being qualitative, are not easy to define, decision making is not

definite and human behaviour is irrational. Hard systems, however, are quantitative, easily defined and have clearly defined decision making procedures. In conclusion, soft systems are qualitative, real life natural systems, while hard systems are man made, defined, and structured quantifiable physical systems.

Accordingly, the social system is absolutely a soft system because it does not emerge from any design process. On the other hand an instrumental system has to be a hard system because it is completely designed, involved a human interference, and has the ability to become quantifiable (Nabih, 1999).

In applying these concepts to the mosque, it is not easy to absolutely identify it as either a hard or a soft system, because the mosque shares characteristics with the social system. As most of the activities of the old mosque took place in one space, that was open to the people at all times, and being in a continuous state of interaction with the society and the environment. This directs the mosque to be classified as a soft system. At the same time, many studies addressed the mosque as a building, which is designed, and might thereby be considered as a man made system. Moreover, contemporary mosques separate activities in different spaces, although within the same complex, and have specific opening times. This means that the interaction between the mosque and society in this case is limited and controlled by man, which supports the idea that the mosque could be a hard system.

2.3.5 Open / Closed Systems

Referring to OSG (1981, p. 17) "An open system is a system that is connected to, and interacts with its environment. A closed system is a system which does not take in from, or give out anything to its environment." The open system might also be defined as a system that keeps itself in a continuous inflow and outflow, as well as a building up and breaking down of components and can never be in a steady state for a long while (Bertalanffy, 1971). The same source goes on to explain that the open system exchanges materials, energy and information with its environment. On the contrary the components of closed systems are unchangeable in a state of equilibrium. The closed system is a system that does not allow anything to pass through either inwards or outwards. All changes occur merely within this system isolated from the rest of the world. Therefore,

all natural systems are open, as proposed by Waddington (1977), stating that the universe as a whole is the only totally closed system. So, one can consider all living organisms as open systems, as they always obtain inputs of food, other sources of energy and raw materials, and produce different kinds of wastes and artifacts (Burton, 1939). In conclusion, the closed system does not accept external influences or it will break down, such as the car engine, while the open system accepts and adopts the external influences and develops complexity, but does not change. The society for example, is an open system because of the interaction between it and the environment.

Local environmental systems interact with their surrounding environments. People living in the system derive benefits from the available resources to comply with their needs. A social system attempts to build on acquired knowledge and methods, at the same time it adapts to the new resources found in new methods (Nabih, 1999).

On the other hand, instrumental systems can be either closed or open. Their development from early primitive methods to more sophisticated ones was paralleled by a change from closed to open form. Again, the system is open only if there is an interaction with the surrounding environment. Interaction with the environment usually takes place in the exchange of knowledge and information. All in all, the system is not merely open to the information transfer, but is also open to public opinion, economic pressure, political strategies and all related aspects (Ibid.).

The mosque, however, is related to open systems being very interactive with the surrounding environment. As stated earlier, the mosque is an institution that has accompanied the transformation of the Muslim society across different historical eras, reflecting the needs of the society and fulfilling them. However, starting from the Ottoman period, or a bit earlier, the role of the mosque towards the society started to decline gradually until, some time later, it was confined to worshipping practices, which changed its open nature.

2.3.6 Systems Boundary and Subsystems

The system boundary is defined as "The conceptual division between a system and its environment; it may or may not correspond to recognised geographical, physical, legal

or cultural divisions and will be drawn according to the observer's purpose" (OSG, 1981, p. 17).

It is easy to realise the concepts of boundary and subsystems in the local environment system. Subsystems are identified in the built, the natural physical environment and in society. As these subsystems could contain some recognised hierarchies, there are some natural subsystems within the overall environment, such as those of plants, animals and human activities. Finally, regarding the boundaries of the local environmental system, they are considered identifiable but a bit fuzzy (Aberlay, 1993).

On the other hand, the boundaries of instrumental systems are defined by the designer of the system, as they are determined by both the objectives and the complexity of the design, the same as the hierarchy of an instrumental system. In the construction of huge projects, for example, subsystems are recognised in the transfer of the labour and the materials to and from the site, which should be associated with the finance as a subsystem of the project (Nabih, 1999).

As for the mosque, in some historical periods, it carried out so many roles such as prayer, education and courthouse all in the same place, which implies that the boundaries here are identifiable but not clear, implying that the mosque might be considered as a social or a local environmental system. However, the contemporary mosque has clear boundaries laid down by the designer, separating different functions. Accordingly, the mosque is complying with instrumental systems. Again it is not easy to classify the mosque either as a local environmental system or an instrumental system.

From the above discussion, the study could not classify the mosque either as a local environmental system or an instrumental system, although it is more likely to comply with the local environment system. What made this distinction hard is the time parameter, as the mosque could be totally a local environment system in a particular era. Though, it might seem as an instrumental system in some other periods. This emphasises the significance of the time parameter, which lead the research to include it in his study. In other words, it seems that the research should be developed, seeing the **mosque** as **a system of transformation**, because the system according to General

Systems Theory explains a number of environmental phenomena merely as they occur in the time of observation (synchronically), and does not **pay any attention to the time parameter**, ignoring the history of the phenomenon and **how it evolved**. Accordingly, the research introduces **structuralism** in the next few pages.

2.4 Structuralism

Structuralism is a theory of several interpretations, mainly because of its various forms and different uses. This implies that no single definition applies to it, unless it is in very general terms. Hence, it was agreed to define a structure as a system of transformation that takes place during time (Piaget, 1971). This concept was the principle of the theory of structuralism, whose models try to create the fundamental reality that is existent within the studied system (Masaud, 1996). Therefore, it is thought that structuralism is the expected progression to General Systems Theory.

However, the study reviews some of the many attempts made to explain this very important concept. Abdalla (1998, p.326) explains a structure saying: "It is a complete set of relationships, in which the elements can change but in such a way that these remain dependent on the whole and retain their meaning." In this regard, Arnulf (1981) says that the whole is independent of its relationship to its elements. The relationships between the elements are of much importance than the elements themselves. The elements are therefore interchangeable, unlike the relationships. Ehrmann (1970), discussed this issue too as he argues that structure is a combination and relation of formal elements, which reveal their logical coherence within given objects of analysis. Ujam (1997) supports the general definition, that a structure is a system of transformation, by explaining that a structure consists of the same components of the system and relationships, the only additions are time and process. Denying the existence of concrete elements in language or any other system De Saussure (1966) proposes an abstraction as the unit and a formal structure as the source of systemness. Hence, systemness of any natural, social or environmental whole could not depend only on the interaction of units within the system, but on the history of the transformation of the system and its units regulated by the system itself during its evolution. This issue is confirmed by Hillier & Leaman (1972-73), indicating that all systems should be explained referring to their history as they transmitted through the structure of their units

and regulated by the evolving systemic regulators.

At this point a differentiation between structure and aggregates becomes necessary, Piaget (1971) argues that structures are wholes, and aggregates are composites formed of elements that are independent of the complexes into which they enter. He continues that insisting on this distinction does not, by any means, deny that structure is composed of elements that are subordinated to law, and it is in terms of these laws that the structural whole or system is defined. Furthermore, the laws controlling the composition of a structure cannot be reduced to the simple, one-by-one, association of its elements, as they give on the whole an overall properties that may differ from the properties of its elements.

Studying the relationship between the concept of structuralism from one side and the instrumental and the social systems from the other side, one can find that the use of a structuralist approach is not suitable to current planning methods (instrumental systems) which do not address living organisms and changes in them are a result of decision making, not natural evolution. So, the concept of structuralism is used to enhance understanding of the social systems (Nabih, 1999). Bearing in mind that the structure of society depends on its elements and on three levels of interaction. These interactions are: the relationship between an element and itself; the relationship between an element and other elements; and finally the relationship between an element and nature. So, if any of the structural elements did not have any relationship with the other members, they would have no identity and would not contribute to the structure of the subject. In other words if there was no communication, transfer would not take place and process would not be controlled and checked (Islami, 1998).

Yet, the performance of any system depends on the relationship between it and its environment, as well as the other systems in that environment. For instance, the performance of a car depends on the roads, that such cars are being driven over, and the other cars on those roads. Consequently, judging the performance of a system should be carried out as a part of the larger system that contains it. Bearing in mind that the components of a system could be either objective or subjective, visible or invisible as well as their relationships (visible or invisible) (Islami, 1998). A system also has two

levels of meanings: the lateral or the direct interpretation which is called in philosophy the denotational meaning, and the one involves hidden, symbolic and cultural meanings that goes beyond the direct meaning and is called connotational meaning. For example, the denotational meaning of a pen is an object which produces writing. But how much writing has this pen produced? How many beautiful ideas has it produced, which have impact on both the individual and the society developments? These are connotational attributes, the hidden meanings (Ujam, 1997). Applying this to the mosque, the denotational meaning of the mosque is that it is a place to perform prayers. However, the mosque also has many connotations, semantics, memories, aesthetics, symbolic values and indirect meanings, which will be illustrated in chapter four.

In relation to other disciplines, structuralism was initially based on the fields of mathematics, logic and language, before becoming more general (Hillier & Leaman, 1972-73). That is why structure is believed to be a set of logic-mathematical relationships that underlie morphological variety and emergent properties of systemness (Islami, 1998). However, structuralism started as an attempt to discover the internal relationships responsible for giving language its form and function. Afterwards, anthropological studies were involved, especially the study of myths which are of the nature of a language, to the structures of the unconscious, as they are revealed in psychoanalytical discourse, to the structures of literary language as well as of the plastic arts with their language of forms, and eventually to the remaining sciences (Arnulf, 1981).

Hillier & Leaman (1972-73), argue that structuralism has a greater role than contributing to the emergent synthetic paradigm of science, it is a paradigm of creativity. However, structuralism is considered to be the science that forms scientific bonds between disciplines, such as theoretical biology and the analysis of myths, art and mathematics. Yet, the dimension of time was introduced to biological science through the theory of evolution, which will be shed light on later throughout this chapter.

Hence, the research overviews hereunder some of these relationships between different subjects, just to emphasise the significance of such a concept. Regarding the relationship between the environmental sciences and the language-speech distinction, Hillier &

Leaman (1972-73, p.70), claim that "the formal equivalent to 'language' as a structured whole is the morphology of physical environment as a social manifestation. The equivalent to speech is the individual or group transformation and elaboration of that structure. The latter is almost certainly governed by gradually changing codes".

In general, structuralism was used in architecture as a tool to understand human behaviour, unlike the instrumental system, which was used in architecture as a decision making tool. Structuralism is thought to be the most important modern movement in architecture and urban planning. It appeared in response to the movement of functionalism, which was well known in the early decades of the twentieth century (Heuvel, 1992).

In this concern Newman (1961), claims that structuralism was first introduced into architecture at the CIAM 59 in Otterloo by the Dutch architect Aldo van Eyck, who was influenced by the anthropologist Levi Strauss, and was one of the pioneers in establishing the link between structuralism and architecture by studying the relationship between social structure and the built form. He suggested that the role of the architect is to understand social behaviour and the user's requirements, referring to the user, not to his own personal vision, then to accommodate this in the built form (Nabih, 1999).

Furthermore, the built environment could be considered as a system of transformation of physical and socio-cultural realities which cannot be understood only in the course of the three dimensional buildings, but in a space–time process (Masaud, 1996). However, Aldo van Eyck believed that place and occasion mean more than space and time, because, in the image of man, space means place and time is occasion (Hertzberger, 1991). In fact van Eyck sought a unity between building and people. A unity which should bring people to the city and to the community, to the place and to the space. This structuralist approach is the consistent nature of all his principles, of all togetherness. Hertzberger explained this saying that "It would be something if everything we made encouraged people to become more closely acquainted with their surroundings, with each other and with themselves. This implies arranging things differently, so that the world, in so far as it is amenable to our influence, becomes less alien, less hard and abstract, a warmer, friendlier, more welcoming and appropriate place; in short, a world

that is relevant to its inhabitants" (Hertzberger, 1980, p. 38).

Applying this approach to the mosque, the research postulates that the mosque is a system of transformation, because it has adopted and accompanied the social transformation of the Muslim community, which enabled it to play such a vital role in the history of the Muslim society. Therefore, the structuralist point of view will be used in the present study, to read its transformation, in part two of this thesis. However, the notion of structure incorporates a number of key ideas, discussed hereunder.

2.4.1 Wholeness

Structural wholeness is not a simple combination of the components, but rather it is the components and the laws linking them together. These laws are the same laws controlling the system's transformation from one form to another, in response to its changing environment. Structuralism is more concerned with the processes of transformation, not the internal relationships between the components of the systems. It attempts to define a purpose of a system, to which all its internal relations become secondary in fulfilling that purpose (Piaget, 1971).

Piaget (1971), also argues that the idea of holism in structuralism was developed to explain that wholeness is the transformation of knowledge through time in a given structure. Hence, the concept of structure depends on this process of transformation and that the transformational process itself is a key concept in understanding the whole and how it works. In general, it could be assumed that wholeness is a characteristic of the structure.

As discussed earlier in this chapter, holism is recognised in the social system, as it is acknowledged in cultural norms, laws, and practices that govern the individuals of the society. On the other hand it is not recognised in instrumental systems. Consequently, in the built environment and the mosque in particular, it is necessary to study the history of features and elements, how they have evolved and how they have organised into an overall structure.

2.4.2 Hierarchy

Oxford English Dictionary defines hierarchy as a body of things ranked in grades, orders, or classes, one above another.

Hierarchy is considered a type of patterning signifying interaction between elements having the relations expressing themselves in reproduction or the continuity of interaction in time. It is the organised complexity of a structure, there is a hierarchy of levels of such organisations, each is more complex than the one below. A higher level is characterised by emergent properties, which do not exist in the lower level. Hence, it is not an aggregation of elements, but an expression outlining a set of relations between things controlled by some major formative laws (OSG, 1981).

The structure is influenced by the ordered relation of parts to a whole, being arranged in manner in which the components are connected together. According to this order, components of a structure could be understood by integrating into structures of a higher order.

According to structuralists, hierarchy is the mutual super-ordination and sub-ordination of components in a constant regrouping. In such process components are significant for the whole meaning of the structure, which constantly changes in respond of their regrouping.

The ordered relations of the structural elements promoted a certain operation of ranking and sub-ordination schemes, which leads to a characterised classification and the setting up of correspondence to become systematic. Strauss refers to hierarchy where he says that every form is content for higher forms and every content of what is content (Piaget, 1971).

In biology, there is a hierarchy of structure realised in a living organism that is: molecules, organelles (certain entities responsible for the organisation of the cell), cells, organs and the organism. The features of each level is different from the upper level and the complexity increases, until it reaches the ultimate object, the organism, which has an identity as a whole. This identity is formed from such hierarchy, claiming that each

level of this hierarchy is more complex than the lower one.

The same principle applies to social systems as the social hierarchy of some people living in a certain place, starting from the individual to the family to neighbours and eventually to the overall community. Hierarchy also applies to the built environment, as it starts from the home to the neighbourhood to the settlement and to the city or town. In the case of the mosque and as stated in chapter one, there is a hierarchy that determines the category of the mosque, whether it is a *Musalla, a Masjid* or a *Jamie.* This hierarchy copes with the hierarchy of the built environment. For example, *Musalla* serves the *harah*, *Masjid* serves the neighbourhood and *Jamie* serves the city. This hierarchy is dependent on so many factors such as the number of worshippers, which is reflected in the size of the mosque, and the density of other mosques within the same area, in addition to the services it offers to the society.

Applying the concept of hierarchy to the mosque, it can be related to the different roles the mosque plays in the life of Muslim society. For example, from the educational point of view, education started by lessons in Quran and Sunnah (sayings and doings of the Prophet- pbuh) and was developed gradually until Muslim scholars produced their philosophies and theories within the framework that was supported and encouraged by the mosque as an institution. So, the education system in the mosque enhanced its complexity and it became a place of high order in the hierarchy of Muslim society. This is why it has an impact on every aspect of Muslim society, i.e. urban structure, spatial organisation, thoughts, intellectuality etc. Hence, the place of the mosque in Muslim society is super-ordinate.

2.4.3 Surface Structure and Deep Structure

Structure is an abstract set of formal relations underlying the greater manifestation of observable forms (Hillier & Leaman, 1972-73).

Chomsky distinguishes between a surface or perceptual structure and a deep or conceptual structure. Deep structure is identified as an abstract underlying order of elements that allows the functioning of transformational rules. The rules outline deep structures into surface structures. It is then considered not merely as a system of visual

relationships, but as a transformational process (Eiseman, 1994).

Hence, one cannot detect the identifying criteria and essential components in a straight forward method by just looking at the surface appearance of the physical objects instantiating them (Balzer et. al., 1996).

Structure, as a theory, illustrates the set of phenomena it underlies, by clarifying how they could be produced by applying the laws of transformation to an underlying structure. It is in the deep structure and transformation laws, which produce the surface structure. Structuralism suggests that deep abstract formation is the essence of richness and variety and that its applications return structure to the surface level. Hence, it could be said that the deep structures represent the basic grammatical relations, while surface structure is derived from the application of transformation (Hillier & Leaman, 1972-73).

Structures are the real things, which underlie the appearance. Marx suggested that if there were no difference between the inner structure and appearance of things, we would have no need of science (Assiter, 1984).

The search for deep structures results an interest in the details of transformation laws. Applying this to the social structure Durkheim claims that behind actual social relations there is always a conceptual structure that is only discoverable by elaborating abstract structure models (Piaget, 1971).

According to Eiseman, the surface level is about the sensible aspect of architecture and the deep level is about the syntactic aspect. Deep structures concern the underlying relations, and provide an abstract conceptual framework for the formal regularities. Eiseman refers to Chomsky's idea of deep structure as a model for outlining the processes by which the physical aspect of architecture is derived from a series of abstract formal regulations, another level at which formal relationships interact. Gandelsonas claims that deep structure allows for an analysis of the interaction of the surface and deep structural levels (Eiseman, 1994).

Structuralism paid attention to the meaning of underlying structures. It was a holistic

scheme that viewed patterns and processes as mostly influenced by structural essentials (Herbert & Thomas, 1997).

Surface structure indicates the building of the mosque itself, its ornamentation and decoration, its location and all the visible aspects. Deep structure is the meaning and the forces responsible for producing such design in such place.

2.4.4 Change, Evolution and Transformation

Time might be defined as it is measured, referring to the earth's rotation around the sun. Biologists have another opinion about time, as they relate it to plant growth, dividing time into units. Ackoff et al. (1972, p. 252) defines time stating that "Time is a property of events that is sufficient to enable one individual to individuate any two changes in the same property of the same individual". They also advocate that all events are a change of an individual's unnecessary property.

One of the most important issues that is correlated to time is change, already associated with evolution[8] and transformation. In this context the present research discusses these notions in the next few lines.

Time and change are very important dimensions in studying the transformation of any system. According to the Webster's International Dictionary change is to make over a radically different form, composition, state or disposition. Evolution is the progressive development of civilisation and social institutions in a fixed sequence of stages. Transformation is the changing of an expression, formula or statement in logic into a different form without altering its substance or intent. All in all, transformation is the increase of complexity of the content. Piaget (1971, p.10) defines transformation as "the constant duality, or biopolarity, of always being simultaneously structuring and structured". Hence transformation is an ongoing process of change that could be applied to nearly all phenomena, for example, the mosque is a system of transformation of its physical elements including all socio-cultural aspects.

[8] In the biological sense Charles Darwin published a theory of evolution during the nineteenth century. This theory discussed the transformation of living things over time, which make it correlated to the context. However, the Theory of Evolution will be discussed in relation to the genetic structure later in this chapter.

Differentiating between change and transformation, the study would like to state that **transformation** is **about the addition of a new element to the system through time, which leads to an improvement for the benefit of the system itself**, in a situation, of not loosing its structure. In other words, transformation maintains the system and crystallises it. On the other hand, **change** is a **total breakdown for the system**, from which a totally new system might emerge. Within this context Ackoff et al. (1972, p. 256) give an idea about change saying "If an essential property of an individual changes, that individual changes to another individual or ceases to exist. An individual changes and remains the same individual when its nonessential properties change. When a subject responds to a change in such a property, he responds to a change in (not of) the individual. Thus, we respond to a change in a friend's clothes, but he is the same friend. Even though two different friends wear the same clothing, we respond to them differently".

Changes can happen either at the individual level or at group level, with regard to the group level; it could be in institutions, technologies, attitudes and behaviours that emerge within one generation, or over many generations. While change at the individual level, might be associated with particular life events and might also be in an expected progressive and life cycle stages. On the other hand, the evolution of each phenomenon is carried out by its structure, which belongs to this particular phenomenon and cannot be used by any other one. It is changing continually and its results are apparent in the phenomenon (Islami, 1998).

In regard to culture, culture is not static but in a state of evolution that might present relativities into the development of its knowledge. Jon Lang discusses that cultures are unique, mainly because each culture has its own historical backgrounds. The culture is the product of long term interaction between people and both their physical and social environments. Therefore, it is impossible to find two societies sharing the same situation in the historical perspective (Lang, 1988).

Moreover, the concept of evolution is correlated to the transformation of forms and contents which comprise structures (Piaget, 1971). Hence, in architecture different

components acquire their contents shaping part of a structure that comprises symbolic values and people's perception. Changes in designs of a building, will only be understood from within culture since they are the result of social transformation (Masaud, 1996).

However, continuity and transformation of the whole through time and over generations caused the sustainability of the systematic interaction between people and their environment. This interaction in addition to the time concepts was developed. This development was reflected on people's ability to construe certain events in the culture and the knowledge is the result of this transformation (Barati, 1997).

Recognising the influence of transformation upon people and their environment, gives rise to questions on the relationship between transformation and both the local environmental system and the instrumental system. Transformation of the local environmental system can be traced in the evolution of building methods and techniques through a period of time. For instance, the changes that have happened to a mosque in a specific place can be regarded as evolutionary and transformational images in architecture over time. However, they have also been influenced by the environment they emerged from, adapting the mosque to its context, as one can see in the materials used. Eventually, it could be concluded that unlike the natural processes (the local environment system), the transformation process cannot be found in an instrumental designed system.

2.4.4.1 Past, Present and Future

Albert Einstein (1923, p. 1) identifies two of the most difficult concepts that are before and after or past and future. He claimed that "The experience of an individual appear to us arranged in a series of events; in this series the single events which we remember appear to be ordered according to the criterion of 'earlier' and 'later', which cannot be analysed further. There exists, therefore, for the individual, an I-time, or subjective time. This in itself is not measurable".

Addressing the course of time, one can say that it goes through the past, present and future, and their interrelation according to events. Past and future are present concepts,

viewed and perceived from this moment, and might not be far from each other. The past is the result of a huge number of experiences, which is brought to the mind frequently through three channels that are institutions, the material environment and written records (Gohar, 1987). Whereas the future as defined by Ackoff et al. (1972), is something taken by a purposeful individual to be potentially producible by his behaviour. Hence, the future is less rigid and rich from the subjective point of view, and less certain from the objective point of view. Furthermore, it could be said that the past is a stable, ordered experience, allowing progressive change and predictable results. The future, on the other hand, is confident of realism (Gohar, 1987).

In this regard Peirce (1923, p. 261) argues that "Future conduct is the only conduct that is subject to self-control". Later he suggests a kind of functional principle to distinguish the past from the future, stating that

> *"One of the most marked features about the law of mind is that it makes time have a definite direction of flow from past to future. The relation of past to future is, in reference to the law of mind, different from the relation of future to past. This makes one of the great contrasts between the law of mind and the law of physical force, there is no more distinction between the two opposite direction in time than between moving northward and moving southward.*
>
> *In order, therefore, to analyse the law of mind, we must begin by asking what the flow of time consists in. Now, we find that in reference to any individual state of feeling all others are of two classes: those which affect this one (or have a tendency to affect it) and those which do not. The present is affected by the past but not by the future.*
>
> *If of two states each is absolutely unaffectable by the other, they are to be regarded as parts of the same state. They are contemporaneous".*
>
> (Peirce, 1940, p. 343)

After making this distinction between past and future, the study returns to the notion that past and future are present concepts. For instance, some events in the present time could create a mental image of the future. Similarly, a future concern or an incorrect highlighting on the past might direct to a failure in totally experiencing the present (Gohar, 1987).

However, to link the concepts of past, present and the future to human mental processes,

as the governing force behind any research work, one can say that past is correlated with remembering, present is correlated with perceiving while the future is related to prediction **(Figure 2-1)**. These points have no optimum, they change in response to the change of the outward circumstances and in accordance to the individual's power to make the developments of intellectual or emotional connections (Gohar, 1987).

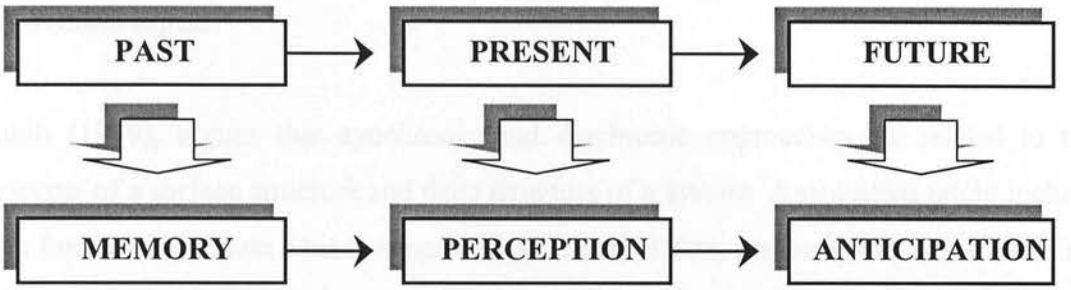


Figure (2-1) The correlation between past, present and future on one side, and memory, perception and anticipation on the other side. Source (Gohar, 1987) and modified by the researcher.

It is important to use the proper concept of the past and the future in order to control changes. These changes are in some sense related to the speed and relevance of present events, which can be determined upon the answer to the following two questions. How deep is the study of the past and the future? What aspects of them are selected to be examined? (Gohar, 1987).

Moreover, time is a vital part of reality because everything real lasts for a certain period of time that changes relatively as time passes. In this regard it is worth mentioning that both past and future have parallel structures in the mind, as well as equal reality. Waddington (1977), referring to Whitehead (1923), argues that the present is actually the fringe of memory shaded with anticipation, stressing that all trials to affect the world should act on the processes which are going on. Temporal change is the major medium of all activities as well as human's. Accordingly, the present research suggests that it is not enough to study the mosque only as a system, it should be studied as an interrelated set of processes.

2.4.5 Synchronic and Diachronic Approaches

Structural sciences involve two basic clarifying strategies, the synchronic and diachronic

approaches. Ujam (1997), sheds light on those two approaches saying that the synchronic dimension is concerned with the events of phenomena at a particular period ignoring historical backgrounds, or in other words, as they appear at the time of observation. The diachronic dimension, on the other hand, is the study of a phenomenon and its development through time, thus diachronic deals with history as a time related influence, which is considered to be a vital factor in the process of the transformation of any cultural aspect.

Nabih (1999), argues that synchronic and diachronic approaches are related to the concepts of a surface structure and deep structure of a system. Any system might include both forms of structure. This is supported by Islami (1998), claiming that any system has two structures, the first structure regarding its performance and that is identified synchronically, it is the surface structure. The other one is identified diachronically, which is the deep structure.

The stability of any system, with its ability to change, is not in three dimensions synchronous space, but in space-time, that is, in the surface structure of such a system. At this point a question might arise that needs an answer, how did the structure of the past produce the structure of the present? To answer this question it needs a diachronic methodology in the deep structure of a system (Islami, 1998).

The concepts of synchronic and diachronic have been mostly applied to linguistics, economics and sociology (Piaget, 1971). In this regard De Saussure (1966, p. 99) claims that "Synchronic linguistics will be concerned with the logical and psychological relations that bind together coexisting terms and form a system in the collective minds of speakers. Diachronic linguistics, on the contrary, will study relations that bind together successive terms not perceived by the collective mind but substituted for each other without forming a system". Within this context Piaget (1971, p.79), stated that "The history or rather chronicle of a word, however, may simply consist of a series of changes of meaning without any mutual relations except such as result from the necessity of answering to the expressive requirements of the successive synchronic systems to which the word belongs. Normative and conventional structures are, therefore, at opposite poles as regards the relations between synchronics and

diachronics".

Those strategies have not been commonly used in architectural fields. However, Hillier & Leaman (1972-73) briefly introduced them in their paper 'Structure, System, Transformation'. Ujam and Stevenson (1995) also offer another attempt introducing these concepts as an approach to achieve sustainable design in architecture. They claim that:

> *"The principal aspect of our reassessment of environmental philosophy as it underpins architectural design concerns the important distinction between how objective scientific and cultural observation view time...*
> *...cultural time involves 'diachronic' perception, which concentrates on the phenomenon as concept which has a history of evolution and representation in the human mind. An example of this might be the evolution and transformation of 'column' from a marker stick for herdsmen to the civic columns found commonly in market squares which provide the same 'sense of place' and spatial gathering point. The memory of the marker stick is deeply embedded in and underlies the perception of the civic column although both the perception of the physical entity and physical entity itself have been transformed over time".*
> (Ujam & Stevenson, 1996, pp. 47,48).

Furthermore, synchronic and diachronic approaches are realised in the changes of the architectural form that occurred over time. The dome, for example, has been existing for a long time. It has adapted both periodically and throughout history. Synchronic approach is realised in the variations in form and structural materials within a certain period of time. In the diachronic transformation through history, it maintained some characteristics found from the beginning of its existence while adapting other characteristics. This transformation process would be non-existent if it was not carried out through the people's applications, being a part of a holistic system. Therefore, it remains capable of successfully interacting and adapting to its surroundings and requirements.

The study would like to emphasise the significance of these two distinctions in architecture. Applying this vision on the nature and essence of the mosque, the research suggests giving emphasis to the diachronic approach in the study of the mosque, tracing interactions between its elements, events, and their properties, because the actual

meaning of the mosque is reflected in its history, role and evolution.

2.4.6 Self-regulation

The system can learn and change its order and reproduce itself, in addition to keeping itself in a relatively ordered and stable state. According to self-regulation the system combines the process of change and stability and so its units are regulated by the system itself. Piaget (1971, p. 14) shed light on the notion of self-regulation saying that: "...in adding or subtracting any two whole numbers, another whole number is obtained, and one which satisfies the laws of the additive group of whole numbers. It is in this sense that structure is closed, a notion perfectly compatible with the structure's being considered a structure of a larger one, but in being treated as a substructure, a structure does not lose its own boundaries. These properties of conservation along with stability of boundaries despite the construction of indefinitely many new elements presuppose that structures are self-regulating".

Self-regulation in structuralism is equivalent to homeostasis in General Systems Theory. OSG (1981, p. 17) refers to the homeostasis as "the maintenance of a system in a relatively constant state in a changing environment." In other words, it is not the ability of the external environment adaptation, but it is the maintenance of the essential internal functions of a system in the face of external forces, using its own resources. One of the best examples about the homeostasis is the human body, as it has the capability to keep the internal body's temperature constant in spite of the external changes in temperature. This is done through a complicated process of adjustments, [i.e. fat burning]. As the conditions under which healthy life can resume in the higher level of hierarchy of the open systems are absolutely narrow. In conclusion, homeostasis refers to regulating internal conditions in order to preserve a permanent state of equilibrium.

Though self-regulation is more complex than homeostasis, because of the time element, as it achieves a level of complexity to involve self-maintenance and closure. Self-maintenance takes place over a larger span of time than might be caused by an increase of complexity, not a lesser cause and effect mechanism. The best example is the defensive attitude between animals adopted to save their well being. While closure means that this system is a closed loop system, not an open interactive system that

implies transformation. In conclusion it is a rhythmic cyclic operation, activated externally or ongoing, such as for example blood flow through the human body (Nabih, 1999).

Finally, Self-regulation proceeds by the application of entirely explicit rules, which are responsible for the existence of the structure. Furthermore, self-regulation bounds the laws of formation and transformation together. Tracing the transformation of the mosque one can realise that it continued to fulfil its role in Muslim society, despite of the changes occurring to it over years (see chapter five). Hence, it could be concluded that the mosque is a self-regulating system that maintained its role throughout its transformation.

2.4.7 Laws of Composition

The relationship between the elements of a structured whole or a system needs to follow certain rules. Laws of composition represent the character of structured wholes, these laws also govern the transformation of the systems which they structure. The structural elements are co-ordinated to the rules and cannot exist independently, which characterise the whole from an aggregation (Piaget, 1971).

The idea of a rule is fundamental in a structure. It is the base upon which the concept of structure is built. A structure is a co-ordination of a set of rules. Structure implies a unified set of laws having their own internal logic (Hillier & Hanson, 1984).

Not only the presence and the function of a structure depends on the rules but also the regular changes and transformation, made by following consistently applied underlying laws (Giddens, 1984).

However, the difference between a pattern and a structure with proportionality, symmetry, concentratedness, and similar compositional features is not structural characteristics (Mukarovsky, 1978).

From the above discussion, it could be concluded that hierarchy is seen and emerges from the laws of composition.

Throughout the above analysis, it appears that there are some principles and rules, which govern the sustenance of the mosque, its definition, its role, that makes it a real mosque. It is important to touch on these points to set the basis for any study addressing the mosque, because the initial distortion to the meaning of the mosque appears to come from ignoring these laws. This is what one may call, in a biological analogy, the genotype of the mosque, which echoes deep structure, transformation, hierarchy and the laws of composition in structuralism. This issue was raised by Ujam (1997), claiming that the best way to transfer the ideas of structuralism from the domain of philosophy into the domain of architecture is by adopting Genotype / Phenotype approach, which was used by Hillier et al. (1987), applying it on farmhouses in Normandy. The following section introduces this concept from both biological and architectural perspectives.

2.4.8 Genetic Concepts

In this section the concepts of Genotype / Phenotype will be introduced, and the theory of evolution from their biological origins, then will shed light on the strategy of applying these concepts to architecture in general and to the area of study in particular. Though, there are some opinions (such as that of Holt-Jensen) against borrowing the methods of natural sciences and applying them in the social and cultural sciences[9]. In this case all elements could become objectified, which will materialise the mind either directly, by being conceived of as the thinking thing, or indirectly by being regarded as a relation between objects in the world. The same applies to behaviour, which holds some subjective aspects such as 'to imagine something', 'to believe something', 'to love somebody' which cannot be translated into the 'thing' language of the natural sciences. These intentional expressions cannot be understood as objects, on the contrary they have to be studied and described in terms of the actor's orientation towards the situation (Barghjelveh, 1998).

Medawar (1961), on the other hand, had a different opinion, dividing the world into the visible environment and the mental climate and stored learning with which we are contacting in our every day life. He distinguished between them arguing that there are

[9] Wilhelm Dilthey (1833-1911) developed the distinctive properties of social science, which necessitate a twofold division of the sciences into natural sciences and cultural sciences (Barghjelveh, 1998).

two kinds of heredity- 'endosomatic' or internal heredity for the ordinary or genetic heredity we have in common with other animals, i.e. the biological concept [natural sciences], and 'exosomatic' or external heredity for the non-genetic heredity that is particularly our own, the heredity that is mediated through tradition, or in other words the transfer of information through non-genetic channels from one generation to the next, i.e. the subjective concept [socio-cultural sciences].

This is obvious in different societies, as certain types of culture produce certain types of concepts, and this is to do with the fact that each society has developed a structure of knowledge, which characterise their being. For example, there are certain traditional acts performed in wedding parties that differ from one society to another depending on the inherited traditions. This implies that the concept of heredity could also be applied to thoughts, traditions, concepts and other subjective aspects, which confirms Medawar's approach.

Taking into account these two understandings of heredity (endosomatic and exosomatic) the biological analogy of the Genotype / Phenotype distinction, which are explained below in (2.4.8.2), was used in other domains and addressed by a number of authors and researchers. For example Charles Lumsden and Edward Wilson, in their book 'Genes, Mind and Culture', applied the biological approaches on the social sciences. They claim that biologists and social scientists have made trials to construe strategies of relationships, life-cycle dynamics, predator avoidance, and energy harvesting, then testing them against the phenomena of social life. They have also claimed that conventional theory, in its most general form, could be applied to all three modes of behavioural transmission: pure genetic, pure cultural, and gene-culture. However, genetic and cultural evolution cannot be linked directly, the intervening deep genetic rules (mostly human) should be inserted. Hence, revealing the true properties of gene-culture translation[10]. When the epigenetic rules operate independently from the surrounding culture or any learning experiences, the interaction between genes and culture will become more simple. In fact, using the language of conventional population

[10] Gene-culture translation, defined as the effect of the genetically determined epigenetic rules of individual cognitive and behavioural development on social patterns, knowing that relatively small changes in the epigenetic rules can force profound changes in the overlying cultural patterns (Lumsden & Wilson, 1981).

genetics will actually emphasise the similarities and differences between pure genetic evolution and gene-culture co-evolution[11] (Lumsden & Wilson, 1981).

The Genotype / Phenotype distinction was also employed in architecture by Hillier et al. (1987), who applied it on farmhouses in Normandy, which will be further elaborated throughout this chapter.

2.4.8.1 Biologic Origins of Genetics and Heredity

Although all human beings are members of the same species, there are great dissimilarities between individuals. Weight, height, eye colour, skin colour and many other features are determined by genetic information. Families have their own genetic traits that can be traced back through the generations (using the family tree), such as red hair, unusually shaped noses, or the hair type **(Figure 2-2)**. Sometimes they may have genetic traits which cause disorders such as colour blindness. This is where the science of heredity and the theory of genetics where introduced. "Heredity is the capacity of certain sorts of matter to use the environment to reproduce itself" (Annett, 1979, p. 93). On the other hand, the theory of genetics is known to be essential to animal and plant improvement. Recently genetics has been studied in relation to the understanding of human nature.

At this point the study suggests to have a historical overview about how such sciences were found and developed. Beginning with the theory of genetics, which started as far back as Hippocrates, when he argued that the general similarity between parents and offspring was due to the transmission of specific substances (the genes in the modern version of this theory) from parental organs to offspring. But, Aristotle put forward some objections, asking- how could a man who had lost his hands in battle, for instance, transmit the capability of forming hands in his offspring? Goodwin (1972) suggests that: "The problem here is that between potential generative capacity and the realisation of that potential. What substance can carry such potential? Aristotle contended that from substance alone one cannot make deductions about form; that knowing the composition of something is not sufficient to determine its structure. One must add to substance a

[11] The theory of gene-culture coevolution is considered to be an extension of sociobiology that creates an internally consistent network of causal explanation between the social sciences and biology. Furthermore,

principle of organisation, which for Aristotle was a form or an idea, immanent in the process whereby order of a characteristic type emerges from disorder or lower order, as the embryo from the egg" (Goodwin, 1972 quoted by Islami, 1998, p. 165).

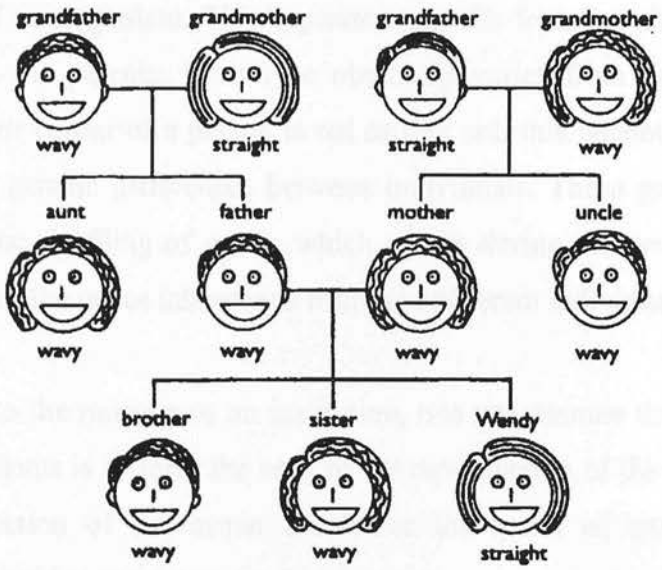


Figure (2-2) Family tree for hair type, illustrating the biological method of tracing any genetic traits. Source (Torrance et al., 1999).

However, the basics of the modern version of the theory of heredity were first founded by Gregor Mendel (1822-1884 AD). He started around the year (1856 AD), using garden peas to find out how individual characteristics are inherited. His experiments and publications are still used today. His achievements in the existence of genes, or hereditary materials, that maintain their structural identity from one generation to another and do not blend with one another, were rediscovered in the year (1900 AD) by three scientists who had worked independently (from Austria, Netherlands and Germany). They reached almost similar results. Afterwards, in the early years of the twentieth century it was showed that Mendel's principles also apply to animals. Then, other important discoveries followed (Francisco, 1980).

2.4.8.2 The Concepts of Genotype / Phenotype

A Gene is a small unit, which controls inherited characteristics. The set of genes[12] that

it is designed to include all cultural systems (Lumsden & Wilson, 1981).

[12] Genes occupy a specific place on strands called chromosomes. Each chromosome contributes to the process of reproduction individually, knowing that all species have a certain number of chromosomes (twenty-three pairs in humans). If a chromosome contains two genes, both genes are likely to be inherited

an organism possesses is called its genotype, in other words the **genotype is the genetic constitution that is inherited during the lifetime of an individual** (Torrance, 1995).

Phenotype is the physical and chemical characteristics, which make up the appearance of an organism. This appearance results from certain genetic information inherited from the parents. Phenotype obviously varies from person to person. For example the hair colour of a person is red or non red, this phenotypic variation results basically from genetic differences between individuals. These genetic differences are partly due to the shuffling of genes, which occurs during the process of meiosis, and partly because of the genes inheritance from two different individuals (Fullick, 1994).

Applying this to the mosque as an institution, one can assume that gathering all these kinds of ingredients is to form the seed of the reproduction of the mosque. This means that the production of a mosque should be the result of transformation but not arbitrarily. It should express a profound meaning.

Fullick (1994), highlighted the role of the environment upon the phenotype of an organism, giving example of the shape of a cabbage claiming that it depends on sunlight and the levels of soil nutrients as well as on the genetic constitution of the individual cabbage **(Figure 2-3)**.

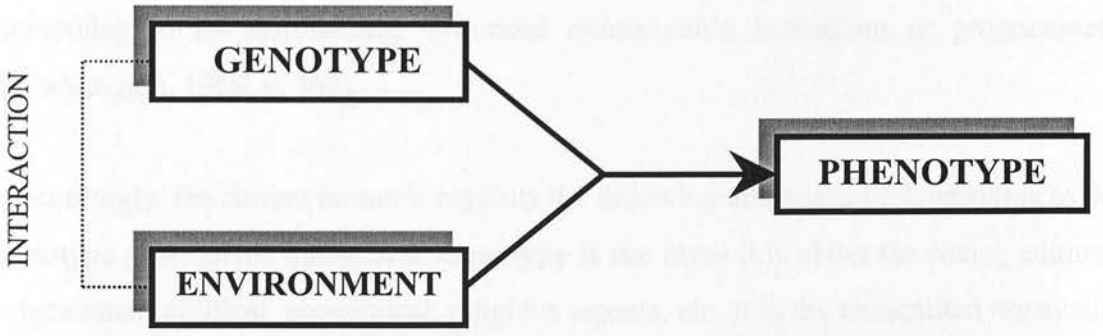


Figure (2-3) Relationship between Environment, Genotype and Phenotype. Source (Serra, 1965-1968) and modified by the researcher.

together (Kalat, 1988). Chromosomes are composed of the molecule DNA that is responsible for determining RNA. RNA is basically responsible for the formation of proteins. Both DNA & RNA are special acids present in the cell. However, it is proved that DNA is the carrier of genetic information (Annett, 1979).

Consequently, it is sometimes possible to reduce the unfavourable influences of a gene by changing the environment, because genotypic differences which are apparent in some environments may not appear in others. This implies that there is no single genotype that is best in all environments.

Obviously, differences in phenotype caused by environmental conditions will not be transmitted to the next generation. For example, a woman who has a suntan obtained from a sunray lamp does not pass this to her children. The learning process of the individual is another example, as this process is based on the personal adaptations of the individual to the environment he experiences (Annett, 1979).

The environment has a vital role in socio-cultural sciences, as it is assumed to be the fundamental base upon which such sciences were built. Hence, genotype and phenotype will be dealt with in terms of their subjective aspects. Considering that the concept of **genotype is basically an informational concept**, as it explains a total informational environment within which the phenotype exists, taking into account that individual phenotypes are linked by a continuously transmitted information structure that controls their form (Gohar, 1987). In other words, it could be said that a genetic system involves the transmission of information from one generation to the next. This interpretation was also adopted by Waddington who referred to the system theory assuming that "it has to include not only genetically transmissible information but this information has to do something to its surrounding. We need transmissible instruction or programmes" (Waddington, 1969, p. 362).

Accordingly, the current research suggests the following analogous understanding to the genotype / phenotype distinction. **Genotype is the idea**- it is about the social, cultural, educational, political, economical, religious aspects, etc. It is the transmitted organising principle. While **Phenotype is the actual realisation of the rule in different physical environments**. It is what is seen, what is produced when the genotype is used as the instructions.

Furthermore, there are some facts to be regarded. Firstly, one genotype may produce

several different phenotypes because of the change in the conditions of the physical environment (Gohar, 1987). Secondly, the relationship between the two is not fixed, it is changeable. Eventually, there are no identical phenotypes between individuals, although the phenotypes may be similar when just one or a few characteristics are studied. Moreover, individuals having similar phenotypes, do not necessarily have identical genotypes (Francisco, 1980).

2.4.8.3 The Theory of Evolution

As mentioned earlier throughout this chapter Evolution is the process of a gradual development. However, the study overviews, in this section, the concept of evolution in its biological context and its relation to genetics.

> *"Evolution is a change in the gene frequencies for a population. It is important to distinguish two questions concerning evolution: How did species evolve, and how do species evolve? To ask how species did evolve is to ask what evolved from what. To answer this question, biologists have to reconstruct a history based on fossils and other kinds of evidence. Their inferences are always subject to revision if new evidence becomes available. How species do evolve is a question of how the process works, and to a large extent we could establish the process of evolution as a logical necessity."*
>
> (Kalat, 1988, p. 468)

The idea of the transformation of living things over time was presented during the late eighteenth century and early nineteenth century, but with no persuasive mechanism until Charles Darwin published his theory of evolution after collecting enough support to be convincing. He thought of a reasonable mechanism and wrote a brief abstract about his work named "The Origin of Species" (1859 AD) (Annett, 1979).

2.4.8.4 Applying Genetic Concepts in Architecture

Bill Hillier was one of the pioneers in introducing the concept of genotype / phenotype to architecture, giving an example of the setting up of army camps, which were created using an army manual. This manual contained instructions about how to create a camp. Although all army camps used the same manual and items, there were similarities and differences. He claimed that: "The genotype is the information carried in the instructions

and embedded in the instrumental set; the phenotype is the observed layout and activity of the camp." (Hillier & Leaman, 1974, p. 5). Moreover, he believed that deep cultural structures may be transmitted without changes through a number of generations producing great variety at the observable level.

In June 1985 Hanson and Graham assisted Hillier in another attempt, trying to discover the genotypes of a house, exploring the problem of spatiality in vernacular farmhouses in Normandy, and using space syntax techniques[13]. They demonstrated that cultural ideas are present subjectively in minds and objectively in artefacts, carrying out their analysis blindly with no information, so that social, economic and cultural information would be explored after the preliminary spatial analysis. In their research they aimed to fulfil three main objectives: firstly, to what extent the analysis could clarify the relationship between patterns of the space and their use. Secondly, to ensure to what extent the regional and other types could be suggested by such analysis. Finally, to discover the probability that specific known traditional themes could be reproduced in some of the houses, and these themes may be clarified by such analysis. Having a sample of seventeen houses, analysing them one by one using a quantifiable method, they reached a conclusion that there is evidence of at least one underlying spatial, cultural and functional genotype defined in terms of relational and configurational consistencies, which represented themselves under different phenotypical arrangements (Hillier et al., 1987).

In Hillier's first approach, the genotype seems to be prior; it is the pre-structure, which is followed by several phenotypic structures. In his second approach, it is quite obvious that the genotype is worked out from various pre-existing phenotypic structures. It is the observation of the phenotypes that gave the possibility of understanding the genotype. Hence, the genotype is in a sense observable through the phenotypes.

However, the present research suggests that this concept applies to the mosque because,

[13] It was known from Hillier et al. (1987) that Bill Hillier and his assisting team also used space syntax techniques, which presents a description and analysis for a space, at both levels the building and the urban. The basic concept of this method is developing a model in which the performance of either real or hypothetical schemes can be evaluated on computer, and hence could be used as an evaluative or suggestive tool. Then they offered some principles to relate between spatial form and social outcome, by checking observation against computer simulations.

again, the mosque as an institution is a structure, and as a building is the expression of an idea. This idea has laws of composition, which are responsible for the reproduction of this institution and will be studied throughout the diachronic analysis of different (objective and subjective) aspects of the mosque in part two.

Another example are courtyard houses (found in the Middle East, mostly Arab Countries) with all their local variations. Their designs respond to the environment, trying to fulfil both the physical aspects (climate and topographical features) and the non-physical (social, cultural and subjective values e.g. the privacy of the housewife). In spite of the slight differences in their appearance (in terms of the number of stories, for instance) which resulted in this phenotypic diversity, there is a system being formed that identifies the courtyard house. Hence, there seem to be a set of rules that govern this formation process, a kind of pattern being followed to reproduce the courtyard house which is in the genetic structure of this phenomena.

That is why it is suggested that a unity might be found in their genotypes and diversity in their phenotypes. Their unity leads towards the deepest part of our abstract systems, or our understandings, so it is very important to notice that the mind produces types and prototypes[14], which help in identifying things. What is produced is the expression of the ability to distinguish between things. But it consists of objects and things, which are tied in a certain order, imposed by the mind itself, and its ability to reproduce the same things. For example, if we don't have the genetic knowledge about the courtyard house, we will not be able to identify it. This implies that the brain immediately classifies the world into categories. This is a kind of genetic thinking, not from the philosophical and biological point of view but from the mind itself.

Defining a prototype will also make it easier to follow the transformation, as there are some fixed aspects and changeable or developed aspects, with respect to the fixed. For example, the rules of the university are fixed, however, there is a continuos phase of transformation happening within the university itself, i.e. the development of researches,

[14] The theory of prototype claims that each stimulus or object is a member of a class of objects, and shares key attributes of that class. In architecture those prototypes were developed to reach the best function and conformity with their physical, economic and natural contexts on which a range of versions of the consecutive types of objects were based (Masaud, 1996).

students and professors, even the campus could be moved or expanded within the rules of the university. When transferring this argument to the mosque- the mosque is the expression of so many forces, collectively generating genetic structure, having fixed aspects such as the orientation towards *Kaaba*, and changeable i.e. tall / short minarets, *Riwaq* / *Iwan* typologies…etc. which will be elaborated in more details later in chapter four.

Thus, the prototype here is suggested to be the Mosque of Prophet Mohamed (pbuh), being the first ever model built in Islam, including all the objective and subjective aspects. Therefore, the aim is to determine how much we have learned from the first mosque, and how much we have learned from the fact that the mosque is a gathering place for the community to learn from each other, to strengthen their identity, to have a sense of belonging, to promote knowledge and to deal with everyday life. All of these characteristics that have been associated with the mosque in its history, could actually be seen from the evolutionary point of view as having a genetic structure. However, there may be some aspects that are not present in the prototype but may appear in other examined structures. For example the Mosque of the Prophet (pbuh) did not include minarets by the time it was built, but there are now no mosques without a minaret, although it lost its physical function (nobody climbs on to it to call for prayer). Hence, it became a symbol, a part of the mosque's image, a part of it's phenotype.

The study suggests that the mosque is an institution, and functions together with the environment as a holistic totality with its own laws of transformation, leading to the ability to view the mosque as a living, dynamic organism. This organism, as with any other organism, is ruled by principles which are defined by the laws of composition within the gene, and are responsible for the reproduction of the same organism. Therefore, it could be said that this organism has a genetic structure, evolved over time.

The main influential factors affected the mosque are the environment, culture, society and the change in the society's needs over time, because societies transform their structural inheritance. For instance, a mosque in Edinburgh would be different from a Cairene mosque. Similarly, the first mosque in Cairo is not the same as a contemporary mosque. But there are common principles between them **(Figure 2-4)**. It is not about a

building but about the whole structure. Therefore this study seeks to conserve the knowledge embedded within the whole structure of the mosque.

2.5 Conclusion

Throughout this chapter, the study attempted to demonstrate how the mosque can be seen as a system of transformation. However, the aim is to deliver a number of theories in a holistic form that together build a new discourse about a general unified framework of philosophical attitudes, and explain and enhance the understanding of the mosque within the introduced framework.

It is important when studying a phenomenon to consider it from the holistic point of view, not merely to study the parts and processes in isolation, but also to take into account the crucial problems found in their organisation and unifying order, being produced from the interaction of the parts, totally changing the behaviour of the parts when studied in isolation. This approach can be seen in Eastern social philosophy, which is built upon the holistic way of interpreting the world, especially in Islam. This corresponds to one of the main principles of Islam namely unity. The Eastern philosophers believed that the **classification of the world is considered as a human invention because the world is not classified** (Quintela, 1999). The same applies to Muslims who believe that there is a unity in everything in the universe, perceiving it as a whole unity that has a sole creator (Allah). Within this context Teymur (1982) argues that if we presume that Man and Environment are two elements, and there is a boundary between them, this boundary should be imaginary not real. However, fragmentation is accepted under certain condition, or in other words is accepted as a necessity for understanding, being conditionally examined within the contextual base of a culture and the holistic approach.

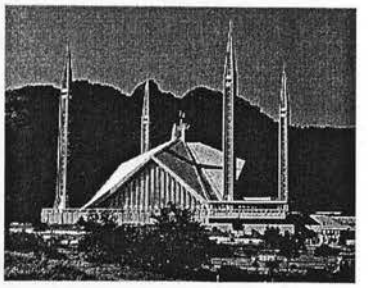
Al-Azhar Mosque. Fatimid Cairo.

Qaytbay Mosque. Mamluk Cairo.

Mohamed Ali Mosque. Cairo.

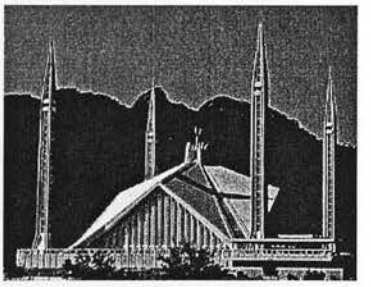
Al-Fat'h Mosque. Modern Cairo.

Modern Mosque. Kuwait.



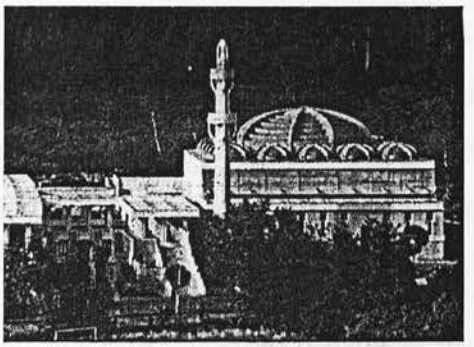
Negara Mosque. Kuala Lumpur, Malysia.

State Mosque. Kuwait.



King Faisal Mosque. Islamabad, Pakistan.

Islamic Centre. Washington, USA.



Islamic Centre. Rome, Italy.

Islamic Centre. Brazil.

Figure (2-4) Historical and Contemporary mosques in different countries. It is obvious that there is something common between them, there is a language, although there are some phenotypic differences.

The intention of the present study is to have a **comprehensive understanding of the mosque, taking into account the broader and more holistic dimension,** this being a part of the Muslim society **because the mosque develops within this context**. The implication of this approach is that holism is a way of living and is difficult to be applied as a methodology. Hence, the study reveals that General Systems Theory is an epistemology that is strongly associated with holism which can be utilised to study the mosque holistically.

In the study of a system, two divisions have been suggested: the local environment and the instrumental systems. Systems concepts were introduced to both systems divisions in order to achieve a better understanding of the mosque. It was also suggested that the local environmental system is a complex natural system that can represent most systems concepts. This is in contrast to instrumental systems, as these are designed to fulfil a particular purpose and depend on the intentions of the designer. Within this framework the study could not identify the mosque as either an instrumental or local environmental system. This results from the fact that the mosque was seen differently during different periods and the model of General Systems Theory views the built environment as a synchronic three dimensional space, not in space – time, and the system is not concerned with time element. Hence, to involve the time dimension in the theory of systemness would require a change in the internal structure. This is where the theory of structuralism can be applied. It was concluded that the mosque should be viewed as a system of transformation, or a structure. In this way, the discourse about system theory introduced to the theory of structuralism, becomes the base upon which to build. Furthermore, because holism and structuralism are strongly associated with each other, it is believed that structuralism, as an epistemology, is an extremely important tool, and the best one to examine phenomena in a holistic way. All in all the research argues that a system is static and repetitive, unlike structure which is dynamic because of the time factor. It is a system of transformation.

In an attempt to create a new vision, the present research suggests that the study of the phenomenon of the mosque should be extended to give an understanding of this phenomenon on a more semantic base. In other words, the study claims that the **mosque**

is a structure, which will be examined in terms of a continual flow through time, shedding light on both its denotational and connotational meanings.

The idea of structuralism concerns, in a way, explaining the evolution of phenomena. Structure has codes and laws of composition responsible for reproduction of the phenomena itself, with its transformation enhancing the complexity and well being of the phenomena. This applies to the mosque.

Genotype / Phenotype is metaphorical application in structuralism. Originally Genotype is a biological term, which means the genetic constitution. It is a structure. In terms of architecture it is the concept. Phenotype, on the other hand, is the actual appearance of an organism. Applying this distinction to the mosque, it could be said that the phenotype is the mosque as a phenomenon, which is the expression, the result of applying and implementing the idea embedded in the genotype. The genotype is the structure of transformation according to structuralism, in other words, **Genotype is the concept, while Phenotype is the materialisation of the idea.**

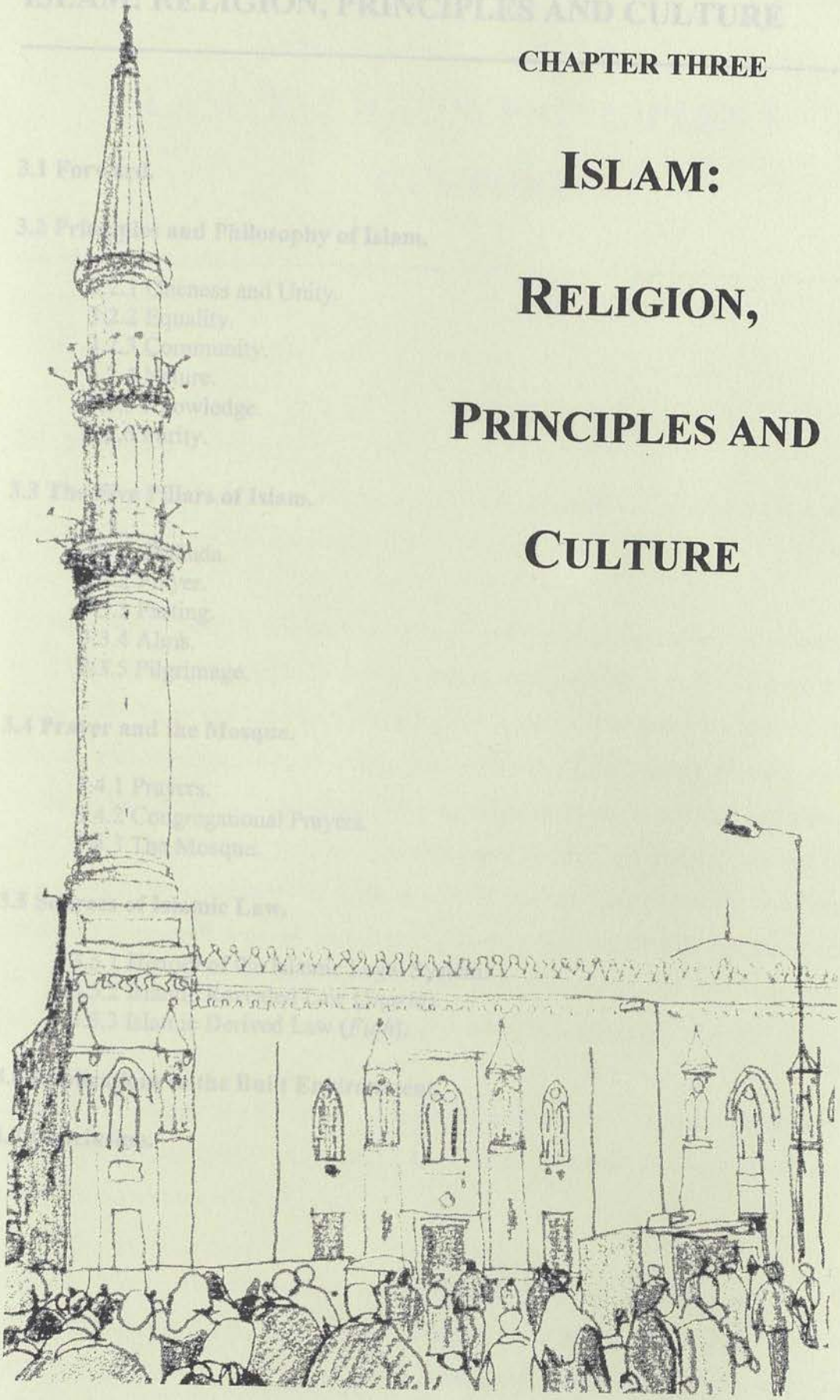
According to all of the above, it is concluded that these theories are integrated to each other in the framework of the research, in which all of them contribute to the discourse suggested by the research and act as a cornerstone of the theoretical framework. It is the evolution of the study that led to this theoretical development, none of them negates or is an alternative to the other.

The mosque has a role in Muslim society, as an institution for a religion, which is a way of living, so it could be said that the mosque is not static and accommodates all forms of transformation, set by Islam and its principles. The deep structure or the genotype deals with the roots of the principles that do not change. They are the fuel of transformation providing enrichment and the motivation needed in the life of the Muslim society. Bearing in mind that the mosque inherits laws of composition that are set up by Islam and its principles.

The next chapter introduces Islam, its origins and its legal system with their different implications on the subject of the research.

CHAPTER THREE

ISLAM: RELIGION, PRINCIPLES AND CULTURE



3

ISLAM: RELIGION, PRINCIPLES AND CULTURE

3.1 Forward.

3.2 Principles and Philosophy of Islam.

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- 3.2.2 Equality.
- 3.2.3 Community.
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- 3.4.1 Prayers.
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CHAPTER THREE

ISLAM: RELIGION, PRINCIPLES AND CULTURE

3.1 Forward

The background of Islam as a religion and culture, and how it affects the mosque will be discussed throughout this chapter.

To begin with, Islam is originally an Arabic word, which means the act of complete acceptance of and submission to the teachings and guidance of God. The root word *Silm* means peace from which comes the word *Aslama*, meaning to become a Muslim. Islam is a universal Message. Its basis is the *Aqeedah* (belief) of the Oneness of Allah. Islam is a religion for all people, at all times, covering all aspects and providing a complete way and a perfect equilibrium. This concept was stated by the Prophet (pbuh) in one of his sayings, when he mentioned that Islam emphasises the principle of equality and does not make any distinction between its believers, whether they are of different races, tribes, nationalities, etc. Only morals, ideas, beliefs and principles count. Knowing that the noble ones are the most God fearing, religious and pious in the sight of Allah.

Muslims feel a sense of affinity and continuity with the earlier religions. Islam does not deny Truth to Christianity and Judaism; it considers that later followers mixed up the Word of God and the word of man.

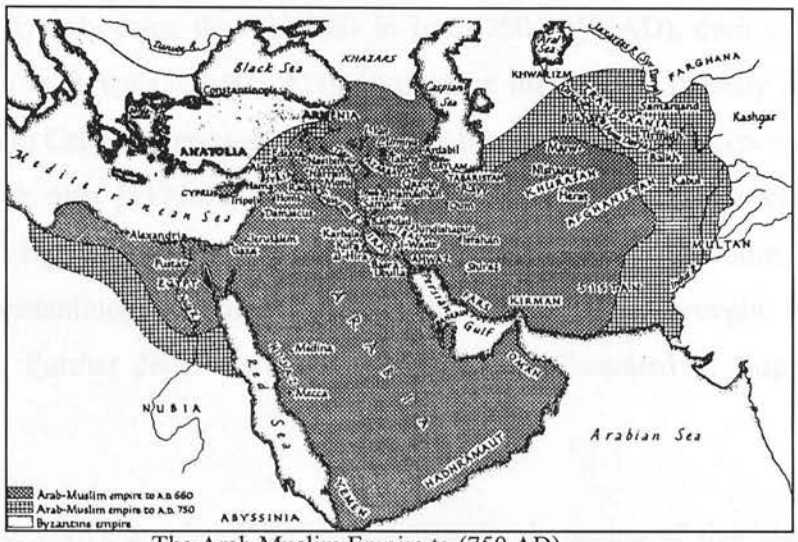
However, Islam outlines three basic principles in dealing with Christians and Jews. The first is that since Judaism, Christianity and Islam believe in the notion of the one divine God, they all share the same belief, or are based on the main aspects of the same Truth.

The second is that Islam respects Judaism and Christianity, and the Quran emphasises that Jews and Christians, the people of the book, are to be treated with special respect. The third principle relates to the chronology of the Quran, which is in line with all religions whose Prophets belonged to the family of Abraham. This includes Moses and Christ who both came from the family tree of Isaac, son of Abraham. Prophet Mohamed (pbuh), however, was the descendant of Abraham's other son, Ismail.

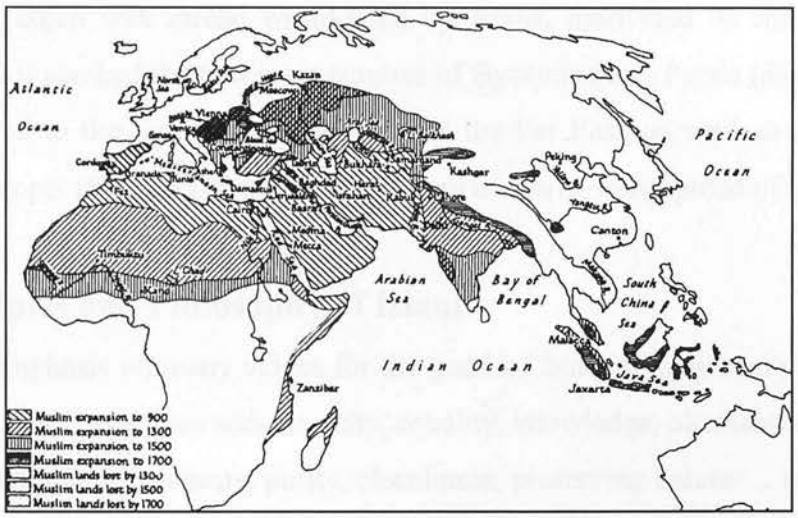
Muslim society lives in the dimensions of *Sharia* (Divine Law), and under the umbrella of Islamic beliefs. Islam directs man in his daily life, responding to all customs, rules of behaviour, and laws controlling every moment of personal, family and daily life. Islam is concerned with every single detail, containing 'inner' and 'outer' meanings, including scientific issues. Islam is particularly capable of coping with things happening within the society via Islamic institutions, and the mosque contains and represents such an institution.

This chapter introduces some background information about Islam, its principles and pillars. Particular emphasis shall also be placed on illustrating the significance of prayers and the mosque in Islam, as well as the main sources of Islamic legislation. This chapter will also discuss some implications to the built environment.

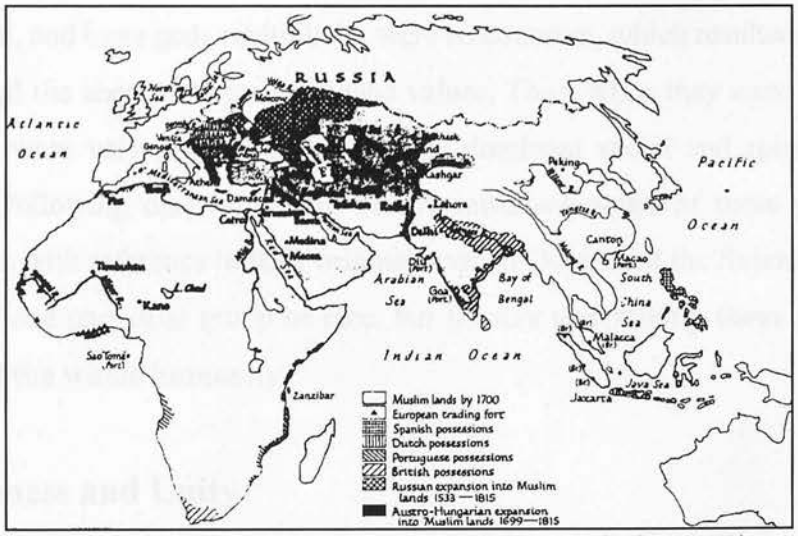
Islam was born in Arabia in the seventh century and was based on the preaching of Prophet Mohamed (pbuh) in Makkah and Al-Madina. Travellers are thought to have contributed significantly to the propagation of Islam, and to spreading it in different parts of the world after receiving the Prophet's teachings in the Arab Peninsula. After the Prophet's death, in (632 AD), four Orthodox Caliphs succeeded him: Abu Bakr, Omar, Othman and Ali. They were of his most knowledgeable, intimate companions. During the Caliphate of Omar, the expansion of Islam reached Syria, Palestine, Iraq, Persia and Egypt, the scope of the present study (Blunt, 1976). Amr Ibn Al-A'as was commissioned by Omar to conquer Egypt in (640 AD) and established Al-Fustat as a new capital there.



The Arab Muslim Empire to (750 AD)



The Expansion of Muslim States and Populations: (900–1700 AD)



European Domination over Muslim and other Lands: (1815 AD)

Figure (3-1) The Spread of Islam over history. Source (Lapidus, 1988).

The Orthodox era ended to the Ummayyid rule in Syria (661-750 AD). Following the Ummayyid dynasty came the Abbasids in Iraq (750-1258 AD), during whom was the Tulunid rule in Egypt (868-905 AD). Next came the Fatimid dynasty (969-1171 AD) being based in Cairo. Afterwards Salah Al-Din became Sultan of Egypt and Syria, as the Ayyubid took over (1171-1250 AD). Then the two Mamluk dynasties (Baharite and Burgi) ruled Egypt between 1250 and 1517 AD, followed by the Ottomans (1517-1850 AD) in Constantinople, then Mohamed Ali periods which brought Egypt into the modern era. Further detail about these dynasties is illustrated in chapter five of the thesis.

Although the above emphases were on Egypt, as the scope of this study, it is to be known that Islam was spread world-wide by Arabs, motivated by the verses of the Quran, until it reached the two great empires of Byzantine and Persia (Stierlin, 1996). It also extended to the Indian Subcontinent and the Far East, as well as to Eastern and Western Europe. **(Figure 3-1)** shows the history of world-wide spread of Islam.

3.2 Principles and Philosophy of Islam

Islam laid emphasis on many values for the good of Muslim community and humanity in general. These principles address unity, equality, knowledge, obedience, co-operation, solidarity, community, honesty, purity, cleanliness, preserving nature … and many other sacred values. Islam came to the Arab Peninsula at a time where severe social stratification, and huge gods multiplicity were so common, which resulted in many tribal struggles and the absence of such humane values. Thus, when they were brought up by Islam, they were very good solutions for the dominant social and spiritual problems there. The following discussion will briefly introduce some of these principles and philosophies with reference to their original texts in Quran and the Sunnah. Islam is not meant with one particular group or race, but favours undertaking **these principles for the good of the whole humanity**.

3.2.1 Oneness and Unity

Islam has a holistic worldview to the universe, believing that everything in the universe was created by God the sole creator. This is the base of understanding the whole unity.

In other words Islamic philosophy is grounded on oneness, wholeness, and unity. Being a way of life and based on such unity Islam deals with the community on this basis, presuming that there is a hierarchical levels of unity within the society, as there is unity within the individual himself, within the family and within the whole community. Islamic philosophy sees the world as one united whole integrating between objective and subjective aspects. Further details were discussed earlier in chapter two, because of the sharing between the Islamic philosophy of unity and the Western philosophy of holism.

3.2.2 Equality

Equality is a very important principle of Islam. The principle of equality has made a major contribution to the lives of Muslims, and provides a coherent structure to a society of different races, genders, or professions (the poor, the rich, the young, the old … etc.). All gather, share and partake in rights and duties fairly and equally in different performed actions. Equality is strongly associated with unity. As stated by Awad (2000), "in order for the society to be one united whole, the individuals should feel they are equal to each other".

The Arab society system before Islam has allowed the possession of slaves. They were men and women brought by merchants to be sold in an annual market in Makkah. They were treated with disregard and humiliation and sent into and indecent condition, in a way similar to that of animals. They were to assist their lords in looking after their business and fulfilling hard works. Islam has been aware of the inhuman implications of such phenomenon and has called for the purge of slavery. During the early years of Islam, many of the slaves believed in the Islamic message and became Muslims. Among these were close friends and scholars, such as Ammar ibn Yasir, Belal Al-Habashi (the personal *muezzin* of the Prophet himself). The whole structure has been totally changed to allow equality that does not distinguish people in terms of their social, economical and any other status. People according to Islam are equal in front of God (Antar, 1988).

Equality produced a characteristic cohesion in early Islam when society adhered to its normative teachings. Consequently, brotherhood between Muslims stems from this principle and relies on the unity of the Islamic belief – a tie, which is stronger than that

between race, clan and blood.

> *"The believers are nothing else than brothers (in Islamic religion). So make reconciliation between your brothers, and fear Allah, that you may receive mercy."*
>
> (The Holy Quran, 49:10)

In addition to addressing many branches of equality concerning the rights of men, woman, children etc., equality applications in Islamic rituals go far beyond what can be contained in such a limited volume. However, equality is also highlighted in the five pillars of Islam, as will be discussed in a following section.

3.2.3 Community

Islam puts so much emphases on the community life. Both the revelations of the Quran and Islamic tradition consider the social life of humanity and the ethics and mechanics of human society. This societal focus is not secular; but ordering the society to act along the ethical lines prescribed in Revelation, to enter into a more proper relation of human beings with God (Hooker, 1996).

Islam emphasises that there are certain primary relationships governing Muslim society, stemming from the Muslim's belief and his relation to God. These relationships are bound by laws in the form of incentives, rights and duties to maintain the cohesiveness and unity of the community. Particular emphases are laid on the individual relationships, regarding man as the nucleus of the society, whose relations to others can formulate an overall view of the entire community (Kaki, 2000).

The general umbrella for this relationship is **brotherhood between members of the community**. This principle of brotherhood dissolves all differences and bonds the members of the Muslim society together, regardless of the race, colour and language. Prophet (pbuh) says:

> *"You see the believers as regards their being merciful among themselves and showing love among themselves and being kind, resembling one body, so that, if any part of the body is not well then the whole body shares the sleeplessness (insomnia) and fever with it."*
>
> (Sahih Al-Bukhari - Sakhr, 1991)

He also described this relationship as:

> *"A believer to another believer is like a building whose different parts enforce each other"*
>
> (Sahih Al-Bukhari - Sakhr, 1991)

In the above Hadith, the Muslim society and its members are depicted like an **organic whole** (a body) governed by a unitary feeling. If part of this unity is troubled the entire entity is affected. This **unity** is like that of a solid structure, which provides safe shelter because of the strong bonds between its components.

Islamic teachings emphasised the right of a Muslim towards another as to support him/her in the time of need by all means, morally and materially. This is applied even in the simplest **daily practices**, for example, it is compulsory that Muslims exchange salutes whether or not they know one another. Visiting the ill is another Islamic duty, as well as partaking in burial processions to share in the bereavement of the deceased family. Islam laid particular emphases on the neighbours' rights, even if non-Muslims. All these things and many others are encouraged by Islam to foster the sense of solidarity and cohesion amongst the community.

The success achieved by Islam in building up urban communities is connected with the insistence the Quran places on human groups namely ***Ummah*** (nation), to which Divine messengers were sent such that no people are denied Revelation, hence the whole humanity becoming potential members of the *Ummah* (Kaki, 2000).

The sacred text of Islam, the Quran, uses the term, *Ummah*, to refer to the community of believers. The term is used to describe individual communities, both great and small, of faithful Muslims and to refer to the world-wide community of believers—in the latter sense of the term it is synonymous with ***Dar al-Islam***, or 'The House of Islam', which refers to the world Islamic community. However, the *Ummah* almost always refers to the Islamic **community in either concrete reality or in the abstract** (Hooker, 1996).

In Islamic social theory, the *Ummah* is formed from the **threefold consensus** of its

members: consensus of the **mind**, consensus of the **heart**, and consensus of **arms**. The *Ummah* is formed from the consensus of minds in that all the members of the society share the **same view of Reality**. It is formed from the consensus of hearts in that all members share the **same values**. It is formed from the consensus of arms in that all members exert themselves to **actualise or realise their values** (ibid.).

3.2.4 Nature

Man always seeks to know nature intimately and to benefit from it spiritually. Nature participates in man's spiritual perfection by its own methods. Through the inner sympathy with nature, man knows more about himself, and about the Creator. The following discussion, based on Nasr (1967), explains the Islamic attitude towards nature.

Nature is a vast panorama of symbols which must be understood before it can be transcended. The spiritual experience itself enables the Muslim to gain a vision into the inner meaning of nature, so that for him, **natural phenomena are transformed from facts to symbols**. Thus, Muslims deal with nature as **a reality comprised of symbols whose understanding marks a stage in their journey towards God**.

Nasr adds that the symbols which are found everywhere in nature, like rain, thunder, moon, sun, flowers, etc. correspond to the immediate appearance of things, an appearance that is known to man through the senses and not through a conceptual scheme dependent upon rationality. Studying the nature, man can know himself through the analogy existing between the microcosm and the macrocosm, and by knowing himself man comes to know God, as for the Prophet (pbuh) said **"He who knoweth himself, knoweth his Lord"**. Thus, one may say that the Reality which lies in the centre of the heart of man also lies behind the appearances of nature, and that every event, particularity in nature, corresponds to an element within man.

A Muslim also finds **nature as a sanctuary which represents the 'eternity' of God's handiwork**. He becomes the channel of grace for nature, and nature becomes in turn for him a vast book of Divine Wisdom, and **an image of Divine Word**, which in Islam is

the Holy Quran.

It is through the realisation of the doctrine of unity that Muslim is able to see in nature the determination of higher state of being and a domain which not only veils but also reveals the Divine essences. In it, not only does he find peace and refuge from the stresses of an artificial world created by man, but also an aid in his path towards realisation. For him, nature has its own spiritual methods and metaphysics. In its order and relatedness, **it displays the principle of Unity** and the submission of all things to the Divine Principle.

Nasr concludes the Islamic goal in relation to nature as **to demonstrate Unity of the Divine Principle, the consequent unity of nature and the interrelatedness of all things, and finally the absolute dependence of nature and the natural order upon the Divine Will.**

Recognising the above approach, it is seen that Islamic rituals express strong consciousness and awareness on how to respect and preserve nature. Islam legislated strict laws to sustain the natural environment and ecological balance. For example, Islam is against cutting trees even during war times. It also bans hunting in certain times of the year, and determines particular types of allowed food for Muslims to maintain sound ecological cycle. Additionally, there is an Islamic analogy between paradise and the beauty of nature, which took the form of gardens and rivers. In a way this analogy promotes protecting and preserving nature (eternal paradise), which is the good believers' award.

3.2.5 Knowledge

Islam is grounded upon knowledge being eventually **knowledge of the Oneness of God** combined with faith and total commitment to Him that saves man. The text of the Quran is replete with verses inviting man to use his intellect, to ponder, to think and to know, for the goal of human life as to discover the Truth which is none other than worshipping God in His Oneness (MSA, 2000). Thus, if a Muslim is ignorant it would not be possible for him/her to learn and apply the teachings of Islam. This could also result in short understanding, reflected in inappropriate practices associated with extremism and

fundamentalism.

The **unifying perspective** of Islam has never allowed various forms of knowledge to be cultivated independently of each other. There has, on the contrary, always been a **hierarchy of knowledge,** in which every form of knowledge from that of material substances to the highest metaphysics is originally interrelated, reflecting the structure of Reality itself. The whole affair of education has always been at the heart of Islamic civilisation as one of its basic necessities because it has been inseparable from the tradition itself which forms the essence and the backbone of the whole Islamic civilisation. This inseparable link to Islamic concept of knowledge is based upon two fundamental axes of **unity and hierarchy**. Like existence itself, with which knowledge is ultimately identical, the science or forms of knowledge are ultimately one, and at the same time belong to a hierarchic order. Knowledge is not random as it appears in the excess of secular knowledge today when there is no longer an organic link between man's various modes and ways of knowing. The Islamic sciences and the intellectual perspectives cultivated in Islam have always been seen in a hierarchy which leads ultimately to the knowledge of the One, God (Nasr, 1976).

Nasr adds, the Quran and Hadith have created an atmosphere for the cultivation of the sciences by emphasising the virtue of pursuing all knowledge that is in one way or another a confirmation of Divine Unity. Therefore, a whole metaphysics and cosmology have issued from the bosom of the Quran and the Hadith and have acted as the basis upon which all the Islamic sciences have been constructed. They have also created a particular atmosphere which has fostered and encouraged all intellectual activity that is in conformity with the spirit of Islam as reflected in the Quran and the Hadith (ibid.).

> *"Read! In the name of your Lord who created ... He who taught (the use of) the Pen, Taught the human that which he knew not."*
>
> (The Holy Quran, 96:1-5)

The above verses make up **the first passage revealed from the Quran to mankind** through Prophet Mohamed (pbuh). It is interesting that of all the things which God chose to begin His revelation with is related to the actions of reading and writing,

especially the latter (Abd-Allah, 2000).

There are plenty of references to knowledge and the pursuit of knowledge in the Quran. The general feeling they leave the reader with is that the possessor of knowledge or wisdom has been given a very powerful gift, and that the pursuit of knowledge is something which should be done actively by everyone. Below are a few verses on the subject:

> *"... Say: Are those equal, those who know and those who do not know? It is those who are endued with understanding that remember"*
>
> (The Holy Quran, 39:9)

> *"...Allah will raise up to (suitable) ranks (and degrees) those of you who believe and who have been granted knowledge"*
>
> (The Holy Quran, 58:11)

> *"He (Allah) grants wisdom to whom He pleases; and he to whom wisdom is granted indeed receives a benefit overflowing. But none will grasp the Message except men of understanding"*
>
> (The Holy Quran, 2:269)

It is to be known that the first source of Islam is the Quran - and we have seen some verses above on the subject of knowledge. The second source is the life of Prophet Mohamed (pbuh). Here are a few of the Prophet's sayings on the subject of knowledge:

> *"A person who follows a path for acquiring knowledge, Allah will make easy the passage to Paradise for him."*
>
> (Sahih Muslim – Sakhr, 1991)

> *"Verily the men of knowledge are the inheritors of the prophets"*
>
> (Sunan Ibn Magah – Sakhr, 1991)

"The quest of knowledge is obligatory for every Muslim"

(Sunan Ibn Magah – Sakhr, 1991)

**Mu`aadh ibn Jabal** is one of the Prophet's close companions. The Prophet (pbuh) once described him as "the most knowledgeable among the *Ummah*". Abu Nu`aim reports some sayings of Mu`aadh about the excellence of knowledge, among which are the following: "Knowledge is a comforting friend in times of loneliness, it is the best companion during travels, and it is the inner friend who speaks to you in your privacy. Knowledge is the discerning proof of what is right and what is wrong, and it is the positive force that will help you surmount the trials of comfort, as well as those of hardships. Knowledge is your most powerful sword against your enemy, and finally, it is your most dignifying raiment in the company of your close companions ... Through knowledge, God raises some people in rank, and He makes them leaders in righteousness and models in morality. The vestige of their faith is avidly sought, their deeds are emulated perceptively, and people will seek and sanction their opinions solicitously and unequivocally. The heavenly angels seek their company and anoint them with their wings, every fresh or withered life they pass by implore God to forgive them their sins, even the fish in the oceans, the beasts of the lands and every bird of prey and migratory bird pray and solicit the mercy of God on their behalf. This is because knowledge revives the dead hearts and drives them out of darkness into light, and because knowledge is the light of the inner eyes that cures one's blindness and restores his inner sight" (Islaam, 2001).

Imam Ibn-Hazm (1990) adds, if the scholar who has spent long peaceful hours (at his studies) stopped to think how his knowledge has protected him against humiliation of the ignorant, and against anxiety about unknown truths, and what joy it has brought him by enabling him to solve problems which others find insoluble, he would certainly increase his expressions of gratitude to God and rejoice more in the knowledge that he has and desire even more to add to it. The usefulness of the knowledge (of good) in the practice of virtue is considerable: anyone who knows the beauty of virtue will practice it, while knowing the ugliness of vice, he will avoid it. From this premise it necessarily follows that knowledge has a part in every virtue, and ignorance has a part in every vice.

Nasr (1976) pinpoints that Islam considers knowledge as something **sacred**, because ultimately all knowledge concerns some aspects of God's *tajalli* (theophany). This

sacredness encouraged Muslim scholars to develop and disseminate knowledge in many disciplines, such as astronomy, mathematics, algebra, geometry, trigonometry, physics, optics, medicine, pharmacology, natural history, geography, botany, zoology, chemistry, and many others, in which they benefited from previous cultures, and contributed to following civilisations.

3.2.6 Purity

Islam has refined a remarkable approach to purity, which ranges from physical to spiritual purity.

Spiritual purity is characterised in the faith of the one God and the intention of being away from every sin and evil action as well as acting on the good deeds. This purity is required in prayer, in which the worshipper is in direct contact with God, as well as in all life practices. A Muslim performs prayers in concentration, devotion and tranquillity, celebrating this particular moment of meeting Him by showing full supplication. Whereas the purity of practices is resembled in promoting truthfulness, honesty, frankness, sincerity, fairness, honour, and all sorts of morality and nobility.

Having a direct influence on the spiritual purity, the physical purity can be approached at two levels. First at the individual level, and second at the building and environmental level. The individual physical purity emerges from personal cleanness and hygiene. A believer should wash before prayer, and is favoured to be well dressed. Building and environmental purity is highlighted in following sections of the research.

3.3 The Five Pillars of Islam

Islam applied the spiritual implication as a base. The pillars contain the message of God and the structure of belief. Generally, there are five pillars: *Shahada*; prayers; fasting; alms; and pilgrimage. Throughout this section the study introduces these pillars, shedding light on their meanings.

3.3.1 *Shahada*

The first and most important pillar is the *Shahada*. It is the statement of faith which declares belief and bearing witness in the one God (there is no God but Allah) and accepting Mohamed as his messenger. Once one believes in this declaration he is called a Muslim (Akbar, 1993). Below are two verses of the Holy Quran, highlighting each of the previous issues, in order.

> *"And your Ilah (God) is one Ilah (God – Allah), La Ilah Illa Huwa (there is none who has the right to be worshiped but He), the Most Gracious, the Most Merciful.".*
>
> (The Holy Quran, 2:163)

> *"Mohamed is not the father of any of your men, but he is the Messenger of Allah and the last (end) of the Prophets. And Allah is Ever All – Aware of everything .".*
>
> (The Holy Quran, 33:40)

Equality is highlighted in *Shahada* all Muslims say the same statement of faith in God, and use the same wording and obligations with no distinctions or concessions, including the Prophet (pbuh) himself and his companions.

3.3.2 Prayer

The second pillar is *Salat* meaning prayer. The Prophet (pbuh) says that prayers are the pillars of religion. Praying should be performed five times each day. These five prayers are distributed over the whole day - dawn, afternoon, late afternoon, after sunset and night. Although it is preferred (for men) to pray at the mosque, prayers can be performed anywhere, as long as it is a clean spot. In addition there is also Friday[1] prayer, which is a special prayers that must be performed in the mosque every Friday afternoon. These are in place of the usual afternoon prayer after an oration is delivered. It is important to mention here that Friday prayers is an obligation for every Muslim male, who has reached the age of discretion (Akbar, 1993).

Adhering to these set prayer times helps the Muslim to remember God as well as keeping them away from all evil thoughts, actions and sayings. As the words of Allah say:

> *"... And perform As-Salat. Verily, As-Salat (the prayer) prevents from Al-Fahsha (i.e. great sins of every kind, unlawful sexual intercourse) and Al-Munkar (i.e. disbelief, polytheism, and every kind of evil wicked deed) and the remembering (praising) of (you by) Allah (in front of the angels) is greater indeed than your remembering (praising) of Allah in prayers. And Allah knows what you do."*
>
> (The Holy Quran, 29:45)

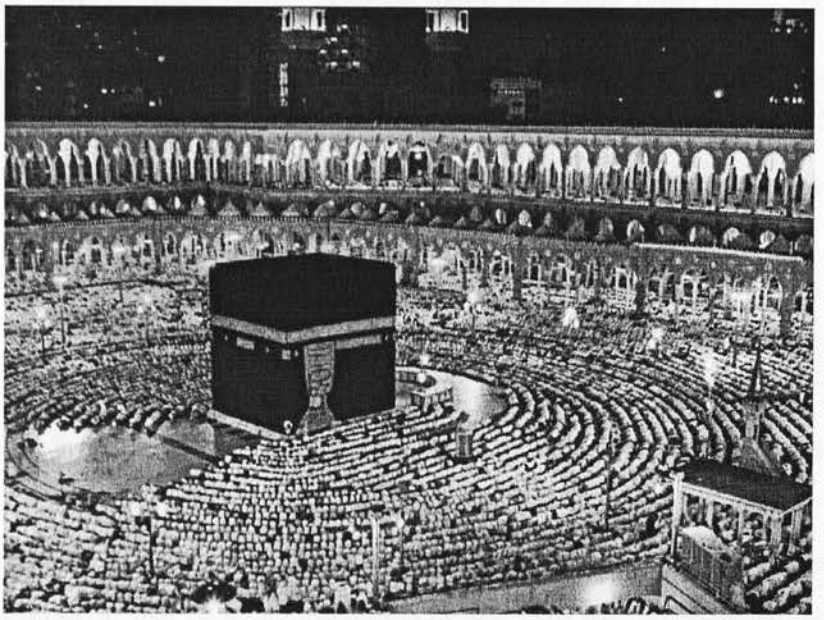


Figure (3-2) General view of the *Kaaba*. Source (Adnan, 2003)

All Muslims should pray at the same times and when they gather in the mosque for congregation prayers, they should pray in rows. Whoever arrives first occupies the foremost lines without any distinction or imposing superiority. This assures unification, no Muslim differs from the one beside him whether rich or poor, old or young. Another aspect that creates a sense of unity among all Muslims, across the world, is that the Muslim has to face towards *Kaaba*[2] in the city of Makkah (i.e. the *Quibla* direction) while praying. This also provides a spiritual and social focus to the holiest place on earth. The mosque has a special recessed section of the wall that is called (*Mihrab*) to indicate the *Quibla* direction.

[1] Friday is the weekly holiday for all Muslims.
[2] *Kaaba* is a cube shape structure, and is considered as the first house of worship built for mankind. It was originally built by Adam and later re-constructed by Abraham and Ismail (Sharma, 2002)

3.3.3 Fasting

The third pillar is *Sawm* meaning fasting. It was mentioned in the Quran,

> *"The month of Ramadan in which was revealed the Quran, a guidance for mankind, and clear proofs for the guidance and the criterion (between right and wrong). So whoever of you sights (the crescent on the first night of) the month (of Ramadan i.e. is present at his home), he must observe Saum (fasts) that month, and whoever is ill or on a journey, the same number [of days which one did not observe Saum (fasts) must be made up] from other days. Allah intends for you ease, and He does not to make things difficult for you. (He wants that you) must complete the same number (of days), and that you must magnify Allah [i.e. to say Takbir (Allah Akbar; Allah is the most great] for having guided you, so that you may be grateful to Him."*
>
> (The Holy Quran, 2: 185)

This takes place in the month of Ramadan, which is the ninth lunar month. It lasts for twenty-nine or thirty days. Physically fasting means there is no eating, drinking, smoking and sexual intercourse, as the Muslim is only allowed to do any of these from sunset till dawn. Spiritually it should help Muslims to train themselves by watching their tongue and their whole behaviour, because, generally, Islam -not merely fasting- is about self-discipline. It helps Muslims to remember that they need to make sacrifices to obey God. Another aspect is to appreciate how the less fortunate suffer, fasting is to achieve an equilibrium in the Muslim's soul, as well as sharing the feelings of hunger and thirst - celebrations and cheer. Socially it gathers Muslims because they all fast and eat at the same time, which again emphasise the sense of unity.

The atmosphere among Muslims is charged. Muslims display greater religious favour than usual in this month. It is a month of remembrance, obedience and new start for people who were not disciplined during other months. Therefore, mosques are full and people try to read the Quran. Donations are given and meals are cooked for poor people. Furthermore, every night during Ramadan there is a prayer called *Salat Al-Tarawih*[3] which also brings together a number of Muslims. Eventually, after Ramadan comes *Eid Al-Fitr* which is a festival celebrating the end of Ramadan.

[3] *Tarawih* prayer is a prayer that takes place only in the holy month of Ramadan after the last prayer in the day. Although, it is not an obligation but a large number of people prefer to perform it as a kind of piety, devotion and faith to God in order to become more close to Him and to follow the Sunnah of Prophet

3.3.4 Alms

The fourth pillar is *Zakat*, meaning almsgiving. Allah said:

> *"...And perform As-Salat and give Zakat..."*
>
> (The Holy Quran, 73: 20)

and,

> *"The likeness of those who spend their wealth in the way of Allah, is as the likeness of a grain (of corn); it grows seven ears, and each ear has a hundred grains. Allah gives manifold increase to whom He wills. And Allah is All-Sufficient for his creatures' needs, All-Knower."*
>
> (The Holy Quran, 2: 261)

The Prophet (pbuh) said:

> *"Man should not eat his fill while his neighbour remains hungry by his side."*
>
> (Musnad Ahmed – Sakhr, 1991)

So these words express the essential compassion of Islam. The strong belief, in Islam, is that everything belongs to God. Therefore, money and possessions should be dealt with as God wishes. This emphasises the significance of sharing, giving to the poor who are in need. *Zakat* can be interpreted as a form of tax, to redistribute wealth socially in the community. *Zakat* in a way provides an opportunity for different social categories to equalise (Akbar, 1993).

Zakat can be given directly, but is preferably conducted secretly in order to avoid embarrassing poor people. As the prophet (pbuh) said in this regard:

> *"the best charity is that the right hand gives and the left hand does not know of"*
>
> (Sahih Al-Bukhari – Sakhr, 1991)

3.3.5 Pilgrimage

The fifth and final Pillar is *Haj* meaning pilgrimage to Makkah. This is a pillar which should be done once in a lifetime. The pillar is conditioned by the capability of the

Muslim to accomplish it, either financially or physically, following the words of God:

> *"... And Haj (pilgrimage to Makkah) to the House (Kaaba) is a duty that mankind owes to Allah, those who can afford the expenses (for one's conveyance, provision and residence) ...."*
>
> (The Holy Quran, 3: 97)

The *Haj* supports the basic Islamic principles by saying all are equal to God. This is symbolised, for example, by everyone wearing the same two white unsewn sheets with no accessories. A poor person could be standing next to a king, without knowing it. With regard to women, they may wear their everyday cloth covering them from head to ankles. The second symbol that the sheets stand for is that the Muslim should be willing to give up everything for God. Thirdly, dead people are also wrapped in sheets like these, which reminds Muslims of the after-death judgement, this being a principal belief in Islam. This phenomenological similarity of pilgrims emphasises the meanings of equality. Hence, it could be said that equality evokes a sense of unity within the society to form one strong body, as stated earlier (Akbar, 1993).

Haj finishes after about five days. The first day is to be spent in Makkah, where pilgrims walk seven times around the *Kaaba*, starting at the black stone. Then, the pilgrim should walk seven times between two small hillocks named *Safa* and *Marwa*, close to *Kaaba*. By the end of these marches, a pilgrim is invited to drink or have a wash from a nearby water spring called *Zamzam* (Ibid.).

Pilgrims then spend the night at *Mina,* prior to moving the next day to spend the whole day in the mount of *Arafat*. By sunset, they head towards *Musdalifa,* to collect some stones to be thrown on the three pillars symbolising the devil (Ibid.).

The pilgrimage ends with the sacrificing of animals for the distribution of meat to the poor. This act symbolises the willingness of the Muslim to sacrifice anything for God, as it principally commemorates the willingness of Prophet Abraham to sacrifice his son Ismail obeying the command of Allah. Abraham's and Ismail's readiness to make this ultimate sacrifice has become an example for all the followers of Islam, signifying the spirit of sacrifice that all devotees should carry in their heart (Sharma, 2002).

Although not a basic step of pilgrimage, visiting Al-Madina, the Prophet's Mosque and tomb is recommended.

3.4 Prayer and the Mosque

In this section the research sheds light on the religious significance of prayer and the mosque, being the point of concern of this study.

3.4.1 Prayers

As mentioned earlier, prayer is the second pillar of Islam and the strongest link between the Muslim and God. It resembles other pillars, being an obligation upon each Muslim. Bearing in mind that it is conditioned by ablution, i.e. complete cleanliness and purification; not only physical hygiene but also the moral hygiene, which is central to Islam.

The significance of prayers is a reflection of its inclusion and symbolism for all the pillars of Islam simultaneously. As Muslims perform *Shahada* during *Salat*, and face *Quibla* (the direction of Makkah) in their prayers, symbolising pilgrimage to *Kaaba*. It also symbolises unification and monotheistic belief - all Muslims stand this way, directed towards the holiest place on earth (Gabr, 1991). Furthermore, Muslims are not allowed to eat or drink whilst praying, abstaining from everything except concentration on prayer. Lastly, the Muslim sacrifices time to spend it only with God, instead of working, earning money or succumbing to any temptations of the world.

3.4.2 Congregational Prayers

Performing prayers in *Jama'a* (congregational prayers) is much preferred to praying on an individual basis. As the Prophet (pbuh) said - it is even twenty-seven times better than that performed in solitude, as it brings all the ranks together, poor and rich, weak and powerful, all in peace and faith (Khiati, 1986).

Congregational prayers can be prayed anywhere, at work, at home, with friends. Although praying in the mosque is preferred, as the assembly at mosques strengthens the

spirit of unity, brotherhood, mutual consultation and understanding (Ibid.). In this regard, the Prophet (pbuh) said:

> *"No one should miss (intentionally without any excuse) the congregational prayer."*
>
> (Sunan Al-Termethi– Sakhr, 1991)

However, all prayers can be practised individually or in a group, except for a few that are never performed unless in *Jama'a*. These are the Friday afternoon prayer, and those of the two feast mornings, namely *Eid Al-Fitr* following the month of Ramadan, and *Eid Al-Adha* at *Haj* time.

3.4.3 The Mosque

From a religious point of view, the mosque is the holy house of God and a sanctuary for ritual prayers. By going into the mosque one enjoys spirituality, purity and tranquillity; and is close to God and in direct contact with Him. It is an opportunity to open the heart, kneel to God, pray in devotion, supplicate and purify oneself. Knowing that God listens and responds to faithful worshippers. However, this does not deny the assumption of the mosque as a centre of everybody's life, this is what is so special about this complex structure, that combines, religious as well as secular activities in a unique composition.

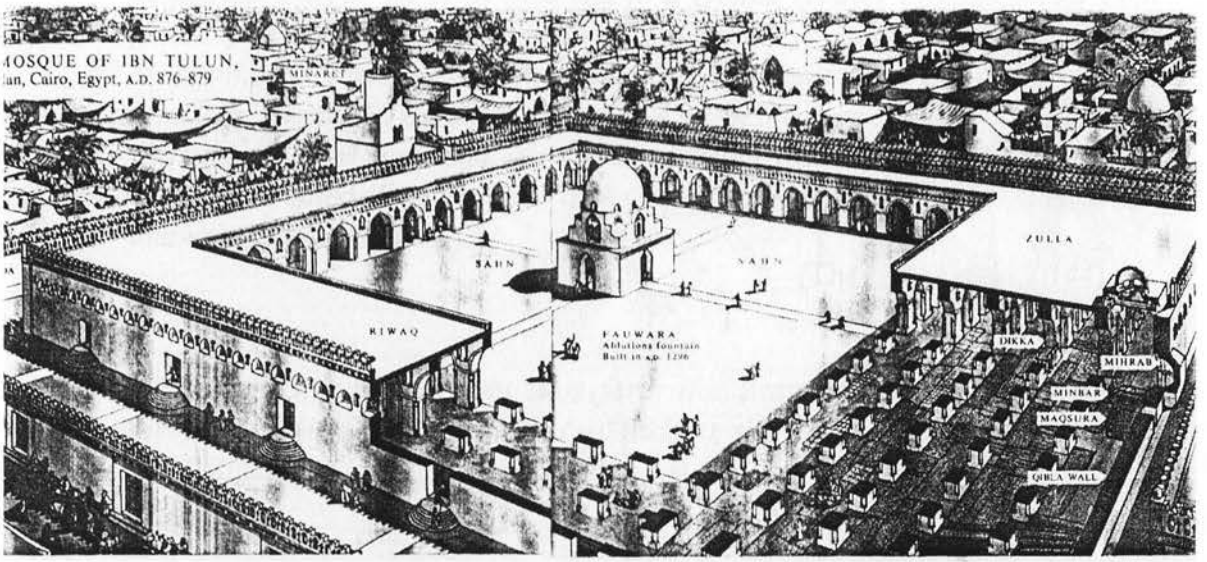
The mosque is an experience through time. Provoking memories of Prophet Mohamed (pbuh) and his companions. Reminding us of their faith to God and their sacrifices for Islam, so that they obtained remarkable achievements and had a glorious history, as the mosque was a place for congregation and gathering of Muslims and the centre of the community. Finally, the mosque is thought to be an actualisation of God's permission as Al-Noor Sura states,

> *"In houses (mosques) which Allah has ordered to be raised (to be cleaned, and to be honoured), in them His Name is remembered [i.e. Adhan, Iqamah, Salat (prayers), invocations, recitation of the Quran etc.]. Therein glorify Him (Allah) in the mornings and in the afternoons or evenings."*
>
> (The Holy Quran, 24: 36)

Building mosques in itself has been favoured as an act of faith, which is quite obvious in

the next *Hadith*,

"He who builds a mosque for God, God will build for him a house in Paradise".
(Sunan Al-Termethi– Sakhr, 1991)



Sahn: Courtyard.
Fauwara: Ablutions fountain.
Riwaq: Portico.
Iwan: Deep vaulted hall.
Dikka: A raised platform, on which a *Muezzin* would perform the prayer movements after the *Imam,* in complete view of all worshippers.
Mihrab: Niche in the *Quibla* wall to indicate the *Quibla* direction.
Minbar: Pulpit.
Maqsura: A place inside the Mosque very close to the *Mihrab,* that is specifically for the ruler to keep his privacy and enables him to participate in prayers.

Figure (3-3) General view of the mosque of Ibn Tulun, showing its different elements and components. Source (Leacroft & Leacroft, 1976).

The mosque acts as a centre of the Muslim community, and in addition to its spiritual role, the mosque is equipped to cater for education in religion and other topics, health clinics, public welfare offices and even rooms to accommodate for travellers or the homeless. Moreover, political affairs are discussed and even juries are held in the mosque. Generally, as stated earlier in chapter one, it is an institution.

A description of the mosque's components and elements will be thoroughly addressed in chapter four of this thesis.

There are three sacred mosques that have particular significance in Islam. These are **Al-Masjid Al-Haram** in Makkah, **Al-Haram Al-Nabawi** (the Prophet Mosque) in Al-

Madina and **Al-Aqsa Mosque** in Jerusalem. All three mosques are considered as holy places in Quran and Sunnah (sayings and doings of the Prophet - pbuh). For example:

> *" Verily! We have seen the turning of your (Prophet Mohamed's) face towards he heaven. Surely, we shall turn you to a Quibla (prayer direction) that shall please you, so turn your face in the direction of Al-Masjid Al-Haram (at Makkah). And wheresoever you people are, turn your faces (in prayer) in that direction. Certainly, the people who were given the Scripture (i.e. Jews and the Christians) know well that, that (your turning towards the direction of the Ka'abah at Makkah in prayers) is the truth from their Lord. And Allah is not unaware of what they do."*
>
> (The Holy Quran 2:144)

> *"And from wheresoever you start forth (for prayers), turn your face in the direction of Al-Masjid Al-Haram (at Makkah), that is indeed the truth from your Lord. And Allah is not unaware of what you do."*
>
> (The Holy Quran 2:149)

Also the *Hadith* (saying of the Prophet - pbuh) highlight the special significance of these mosques, as the Prophet (pbuh) said:

> *"Do not undertake journey but to three mosques; this mosque of mine, the Mosque of Al-Haram and the Mosque of Al-Aqsa".*
>
> (Sahih Muslim – Sakhr, 1991)

These mosques have special ranking, being places of Muslims pilgrimage, where prayers are given higher reward.

Furthermore, Al-Masjid Al-Haram contains the *Kaaba* which have been re-built by Prophet Abraham as the first house of worship to God. As mentioned in the Holy Quran

> *"And (remember) when We made the House (the Kaaba at Makkah) a place of resort for mankind and a place of safety. And take you (people) the Maqam (place) of Ibrahim (Abraham) [or the stone on which Ibrahim (Abraham) stood while he was building the Kaaba] as a place of prayer (for some of your prayers. e.g. two Rak'at after the Tawaf of the Kaaba at Makkah), and We commanded Ibrahim (Abraham) and Ismail (Ishmael) that they should purify My House (the Kaaba at Makkah) for those who are circumambulating it, or staying*

(I'tikaf), or bowing or prostrating themselves (there in prayer).".

(The Holy Quran 2:125)

"And (remember) when Ibrahim (Abraham) and (his son) Ismail (Ishmael) were raising the foundations of the House (the Kaaba at Makkah), (saying), 'Our Lord! Accept (this service) from us. Verily! You are the All-Hearer, the All-Knower'".

(The Holy Quran 2:127)

While the Prophet's mosque in Al-Madina contains his tomb and two of the Orthodox Caliphs, Abu Bakr and Omar. Its significance is expressed in the next *Hadith*.

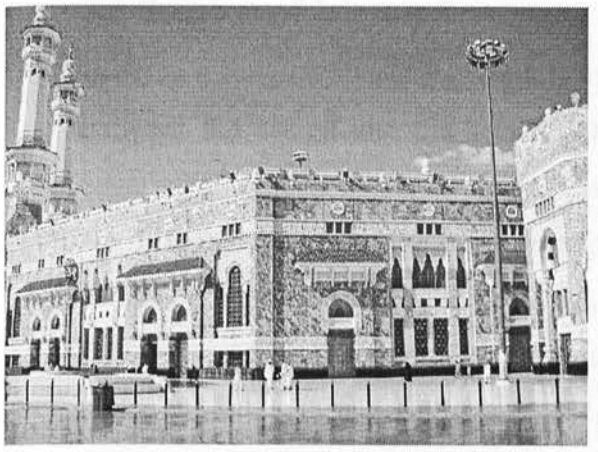
" A prayer in my mosque is a thousand times better than a prayer in any other mosque, except Al-Masjid Al-Haram."

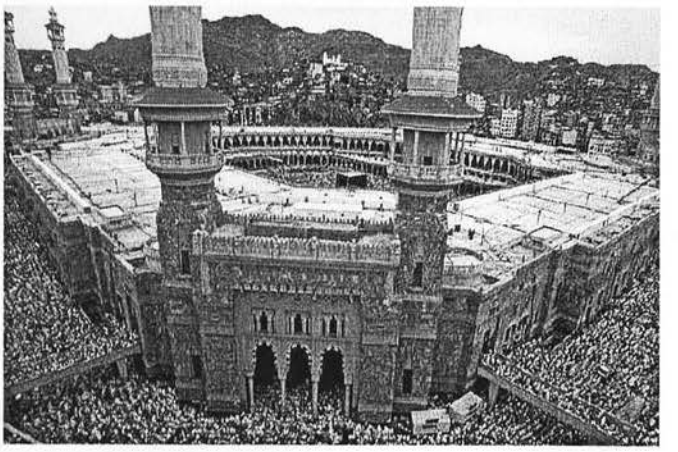
(Sahih Muslim – Sakhr, 1991)

Al-Aqsa mosque, is the place that Prophet Abraham was ordered to sacrifice his son Ismail. As well as being the place that Prophet Mohamed (pbuh) made his Miraculous night journey, the *Isra'* from Makkah to Jerusalem. As stated in Al-Isra' Sura

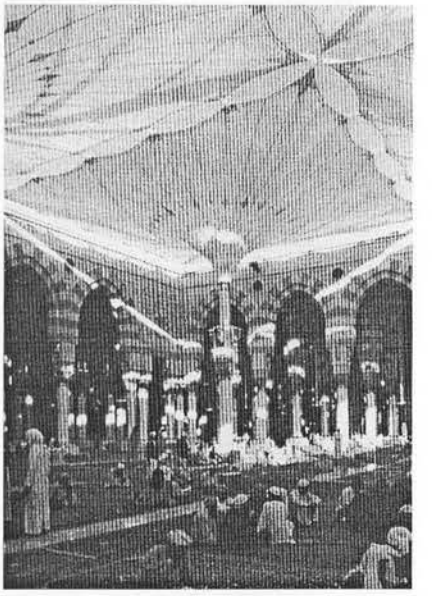
"Glorified (and Exalted) is He (Allah) [above all that (evil) they associate with Him] who took His slave (Mohamed) for a journey by night from Al-Masjid Al-Haram (at Makkah) to Al-Masjid Al-Aqsa (in Jerusalem), the neighbourhood whereof We have blessed, in order that We might show him (Mohamed) of Our Ayat (proofs, evidences, lessons, signs, ...etc.). Verily, He is the All-Hearer, the All-Seer."

(The Holy Quran 17:1)

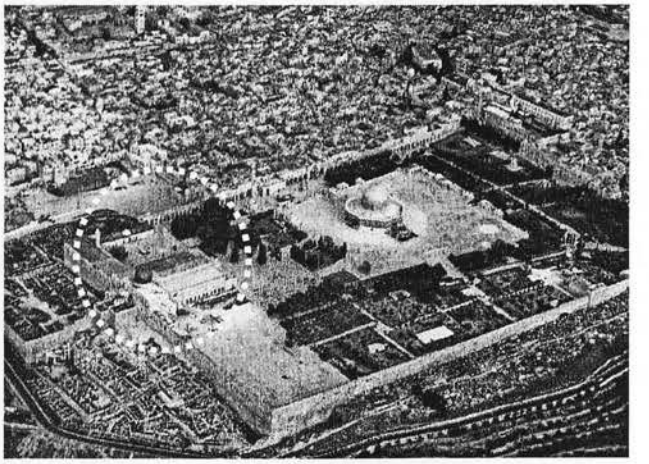




Different views of Al-Masjid Al-Haram in Makkah.



Different views of Al-Haram Al-Nabawi (the Prophet Mosque) in Al-Madina.



Different views of Al-Aqsa Mosque in Jerusalem.

Figure (3-4) Different views of the three sacred mosques. Source (Islam Information Page Gallery, 2003).

3.5 Sources of Islamic Law

Islam as a religion stands for life-affirmation and life-fulfilment, rejecting any division between the sacred and the secular. It gives an integrated view of life and reality, covering all aspects of life i.e. spiritual, social, educational, cultural, economic, political, etc. Life is a whole, so the same principles govern it as well as its branches. Activities regarding economy, politics, law, sex, social manners, are part of man's religious behaviour. Any activity could be religious even if it was secular, what makes it religious is the attitude with which it is undertaken and its conformity with the values stated by God and His Prophet (pbuh). In fact, Prophet Mohamed (pbuh) is the model for all Muslims to follow and seek guidance from in all aspects of human life, from the personal to the social (Ahmad, 1974).

Islamic society has its own laws and legal systems that are set by God. Thus, it covers every single detail of the Muslim's life clearly elaborated by the legal specifications, evolving needs and problems of the geographical and social environment (Khalil, 1994). The significance of studying the Islamic legal system principally comes from the integration between the religion and secular life of Muslim society, knowing that belief and ideology direct the strong outcome of any society. The conceptual application of this assemblage sets the main principles for that society to keep its continuity.

Islamic jurisprudence consists of two main sections *sharia* (revealed law) and *fiqh* (derived law). The subject matter of *sharia* is the Quran and the legal binding Sunnah, whereas *fiqh* is the human understanding of *sharia.*

As for the Quran, the three most elementary messages are firstly, the **doctrinal message**, secondly, the **moral and juridical injunction,** and lastly, the **metaphysical nature of Godhead**. Eschatology and cosmology are made clear; and bear all meanings and teachings. The Islamic community needs to lead a respectable life (Nasr, 1966).

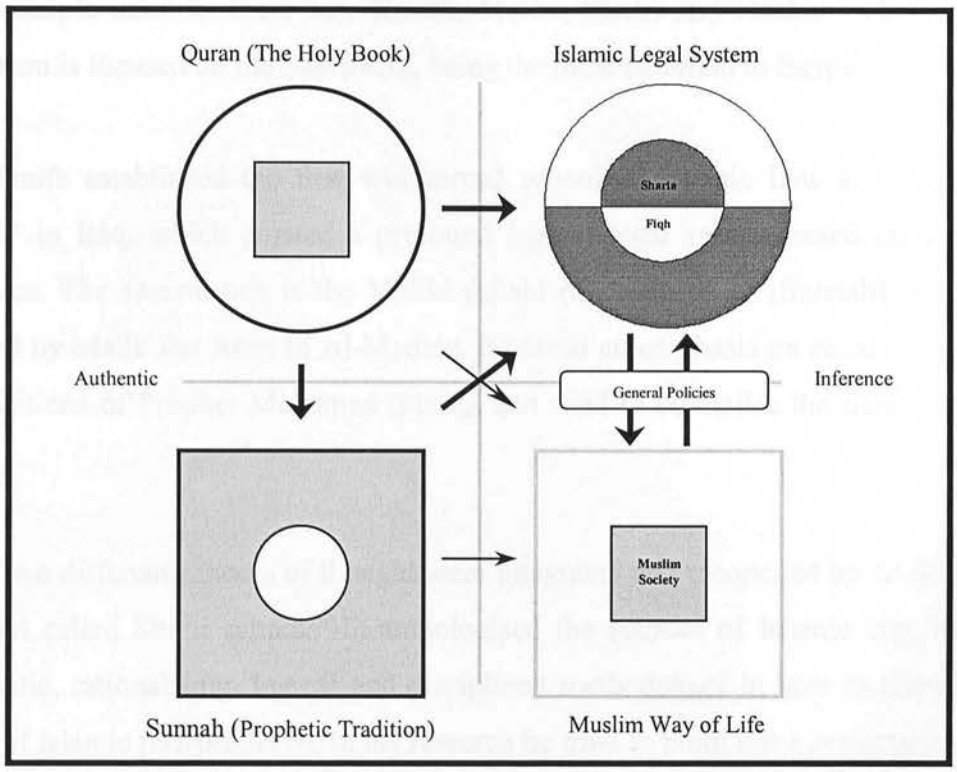


Figure (3-5) Islamic Legal System. Source (Kaki, 2000), modified by the researcher.

3.5.1 History of the Islamic Legal System

After the Prophet's death, his successor Caliphs followed the Quran as the primary source of law through their own unscholastic and free interpretation. The second source they depended on was the Sunnah, to which they were living witnesses. As time went by, changes of environment, social organisation and public interest started to necessitate the demand for more interpretations, so other sources of law were practised besides the Quran & Sunnah, such as *Ijmaa* (consensus) of scholars and *Ijtehad* (interpretation) (Khalil, 1994).

The history of classical Islamic jurisprudence indicates that the jurists managed to face changeable needs in each generation and geographical area within the instructions of Quran and Sunnah. The assimilative and creative spirit of Islam extensively assisted the crystallisation of legal methodology. During the first two centuries a number of scholars studied and developed the subject of Islamic law, and shortly afterwards schools of Islamic Law were founded (Antar, 1988).

In addition to the Shiite sect with its sub-sects, scholars, and Imams, the Sunni sect has

four principle schools, these are: Hanafi, Maliki, Shafii and Hanbali. The following discussion is focused on the Sunni sect, being the most common in Egypt[4].

Abu-Hanifa established the first widespread school of Islamic Law at a 'legislative council' in Iraq, which created a profound logical legal system based on scholastic subtleties. The second one is the Maliki school of Tradition or (Sunnah), which was founded by Malik Ibn Anas in Al-Madina. It placed an emphasis on cases according to the traditions of Prophet Mohamed (pbuh), and tried to eternalise the Sunnah (Khalil, 1994).

These two different schools of thought were integrated and reconciled by Al-Shafii into a school called Shafii school. He anthologised the sources of Islamic law, having a systematic, rationalising, logical and disciplined methodology in how to elucidate the origin of Islamic jurisprudence. In his research he tried to point out a systematic scheme which would aid in interpreting Islamic Law. The major sources he set were *Usul* (roots), denoting the significance of the Quran and Sunnah; *Ijmaa* (consensus of Muslim scholars) and *Qiyas* (human reasonable elaboration of law). Al-Shafii believed that no disagreement should take place between Muslims on points which are explicitly decided in the Quran, Sunnah or consensus of Muslim scholars. He also suggested that for other points, scholars must exert their own judgement in search of an indication in one of these three sources; if a problem has two solutions, which happens very rarely, either opinion may be applied as a result of systematic reasoning (Antar, 1988).

Following Al-Shafii steps, his student Ahmed Ibn Hanbal instituted the fourth school of Islamic law; named Hanbali school. Now having four major schools of Islamic law, and in spite of the vast divergence between all these intellectualisations, none affected the other passively. On the contrary, this enriched impressions and legitimate variations that were based on values of *sharia*. Deductive and inductive rules in legal exposition were employed and consequently the culture was always ideologically Islamic, rational, progressive and idealistic (Khalil, 1994).

[4] However, Sufism and Mysticism is a school of thought that affected the Muslim civilisation by cultivating the soul, to be able to control the outer performance to any obligations. Sufists believe that invocation is the method of realisation of God (Nasr, 1966).

The implication of this to mosque design is a new type of mosque called *Madrasa* (school). This mosque has the four *Iwan* design, specifying each *Iwan* for studying one of these schools of thought, for example Sultan Hasan Madrasa.

Lately, the *door of independent reasoning*, as it has been named, was shut and the dogma no longer evolved from the Quran, Sunnah and consensus but from authoritative publications of the different schools. Progress was made, new ideas arose and legal science was taught as a subject (Hakim, 1988).

3.5.2 Islamic Revealed Law (*Sharia*)

Sharia comprises all the revealed laws of Islam, legislated by Allah in the Quran and the Sunnah of Prophet Mohamed (pbuh). It is the unequivocal, obvious and apparent regulation. These laws are divine in origin, religious in essence, and moral in scope. They refer to worship, beliefs, *moamalat* (all behavioural matters), etc. In other words, these laws were commanded to guide the Muslim in his relationship to God, his fellow Muslims and the rest of the universe.

The primary and most profound source of Islamic jurisprudence is the Quran, which is the scriptural revelation of orders from God. It implicates broad principles and valuable judgements, which can always be applied to all human beings, in different social circumstances.

The second source, the Sunnah, literally spoken means method or way. It is the 'model of behaviour', the manners of the Prophet (pbuh) throughout his life. Being the last Prophet and of such profound piety that he was entirely contracted to the Divine will. Further he was very kind and generous towards other creatures whether man, animal or even plant (Nasr, 1966). The Sunnah acts as a complementary to the Quran and interprets many teachings of Islam which have been mentioned in the Quran in general terms (Kaki, 2000).

Although *Sharia* is more than fourteen centuries old, its principles are unchangeable, but it copes with social and modern transformations. At times of Caliphate, one of the major duties of Caliph was to protect *Sharia*. *Amir Al-Muminin* was the guardian and defender

of faith, as well as leader in prayer. His responsibilities were holistically social and religious (Nasr, 1967).

The general principles of *Sharia* are basic elements of human nature. Although its laws are clear guidelines, they are also not stiff or rigid to cope with progress happening throughout the years. The flexibility needed according to the case, place and time is reached through the *fiqh* or derived law (Ibid.).

3.5.3 Islamic Derived Law (*Fiqh*)

Fiqh is literally interpreted as intelligence or knowledge. Within a religious context, it is the awareness of all legislation of God. Simply, it is man's understanding, interpretation and application of the principles of *Sharia*. It is assumed to be a subsidiary science of the principal Islamic laws that arrange all aspects of public and private life. *Fiqh* clarifies the essence of the Quran and Sunnah (Abd Al-Ati, 1977).

In Islamic law, the fundamental rule in dealings between people is permissibility, unless directed otherwise. On the contrary, any act of worship, that is dealings between an individual and God, is not allowed unless stated otherwise by Quran or Sunnah. This, on the one hand, preserves the rituals of Islam and the acts of worshipping intact, so that everyone would be practising worship the same way as the Prophet (pbuh) did, for as long as humanity lasts. On the other hand, it also provides a flexible framework, that can adopt and adapt to any future demands arising in the areas of communication, technology, society etc. or whatever developments taking place in coming years. Thus, the *sharia* and *fiqh* norms are founded for the benefit of the Muslim community and the balance of its needs (Dawood, 2000).

To perceive *Fiqh* correctly its sources should be presented; basically there are two main sources of *Fiqh,* termed authentic and inference inception (Khalil, 1994). Each one has further subgroups, and only some of them will be mentioned, i.e. those upon which legal judgements as well as legislative laws agreed.

There are four **authentic source** constituents. First, with all respect, the **Quran**. Second comes the **Sunnah**. Then follows the ***Ijma,*** meaning the general consent. It is the most

significant Islamic legal principle obtained by an agreement of domination in legal aspects. Fourthly, ***Qiyas*** (collateral reasoning) is the motive to be followed to certify sources of *sharia.* The same rule could be applied to new problems on the basis of similarity. Facing any situation *Qiyas* is applied to analyse or solve it (Antar, 1988).

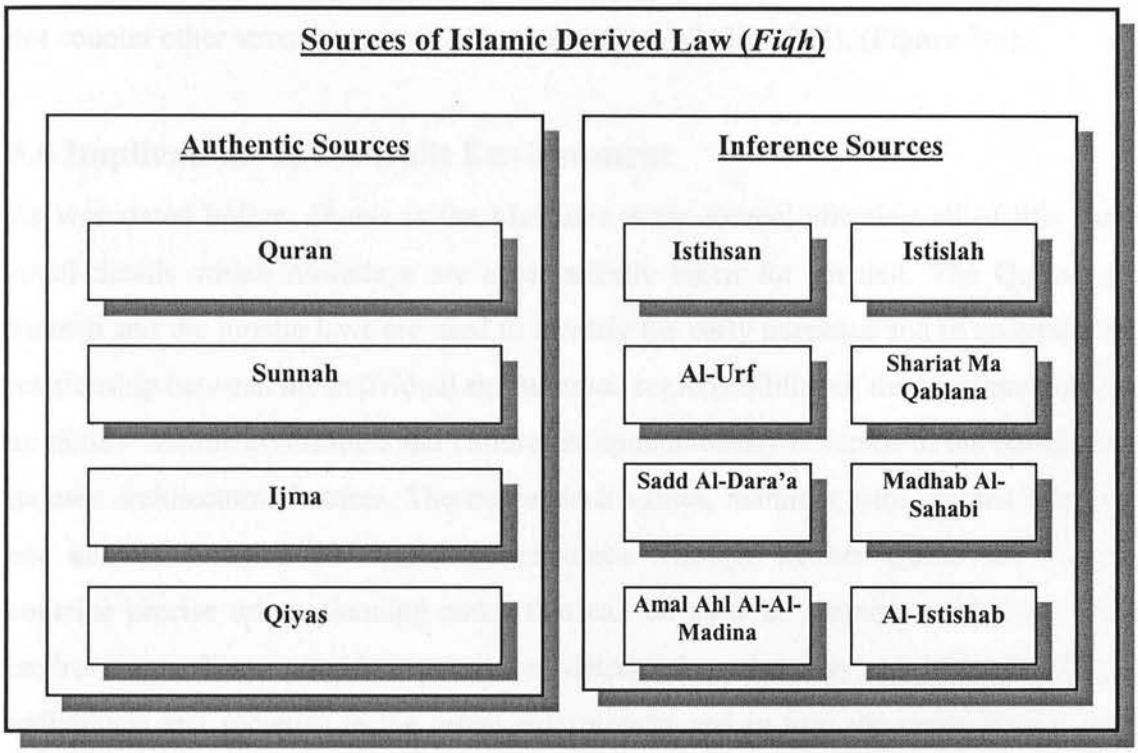


Figure (3-6) Sources of Islamic Derived Law (*Fiqh*). Source (The researcher).

Inference source constitutes eight subgroup aspects, known as ***Istihsan*** and interpreted as 'preference of the better'. In jurisprudence the more certain and positive law is preferred against a less definite one. The second source is ***Al-Masalih Al-Mursala*** or ***Istislah*** meaning the public welfare. Some fine social matters are not clearly understood in the explicit texts of the *Sharia*, therefore the experts of *Fiqh* look towards the general welfare of the community. Thirdly, ***Al-Urf*** nominates traditional law, i.e. any moral habits and conventions people are accustomed to are generally accepted and even supported by Islam, as long as they are within the framework of *Sharia* and do not contradict it, especially so because the Prophet (pbuh) had absorbed a number of pre-Islamic customs. The fourth item is ***Shariat Ma Qablana,*** implying the canons of earlier nations. Unless the rules set by earlier nations do not interfere and contradict with the Quran and Sunnah, this kind of *Sharia* is accepted. The next element concerns ***Sadd Al-Dara'a***, which implies to stop and prevent everything directly related to any forbidden

act or sin in *Sharia* because it will become forbidden and be a sin also. ***Madhab Al-Sahabi*** is about the ideology of the Prophet's companions, as they were taught by the Prophet (pbuh) himself. ***Amal Ahl Al-Madina*** refers to the times of Al-Madina residents during the Prophet's lifetime, which extends beyond this era. Finally, ***Al-Istishab*** is the last matter, which is the accompaniment of existing rules, when this does not counter other stronger sources of jurisprudence (Khalil, 1994). **(Figure 3-6)**.

3.6 Implications to the Built Environment

As was stated before, *Sharia* is the Muslim's main source, affecting all of life, even small details which nowadays are automatically taken for granted. The Quran and Sunnah and the juristic laws are used to identify the early purposes and to ascertain the relationship between the individual and summed responsibilities of the Muslims towards all duties. Islamic civilisation and culture are spontaneously reflected in the building of its own architectural features. The tremendous values, manners, rites, mutual relations and acts of devotion are crucial cornerstones. Though, neither Quran nor Sunnah contains precise urban planning codes that can be used in planning a Muslim urban environment. They provided principles determining the way of life of Muslim individuals and societies in the urban environment and in turn the environment itself (Ibrahim, 1983).

By taking one of the most fundamental principles of the Islamic tradition, unity, Islamic architecture sought to integrate all its characters in the direction of this unity. This method of thinking has arrived at the point at which the objective and subjective aspects of life become mixed together, to the extent that the traditional Islamic cities within which all the physical and social features are packed together in a consistent network (Bammate, 1987).

The Islamic model or urban form has its own identity, consisting of a complex meshwork of elements weaved into a systematic order (Antar, 1988). Sometimes unity may diffuse into matters which are far beyond man's perception to judge, so the Muslim has to refer to the *Sharia* (Walls, 1979). Hence, any new turning situation cannot be easily accepted if it contradicts the comprehensive holistic understanding of the universe in Muslim societies.

The **structure** of the built **environment** is subjectively interconnected to the **ideology**. Ideology is always a part of the **culture**, being a basic tool to observe the environment and understand it. Islamic architecture uses all means to fulfil **unity**. All physical and social or objective and subjective characteristics have to be integrated.

To describe a building, the following terms are mentioned: it is a climatic modifier, a container of activities, a symbolic and cultural object and it is an addition of value to raw materials. In Islamic design, a unique conception of space together with a well-established hierarchy and exact distribution of different functions take place (Broadbent, 1983).

Shedding light on equality as a major Islamic principle, it is found that one of its consequences is the unrestricted access to any public building, which reflects the needs of all people. In fact, the Islamic approach has inspired equality among Muslim people and responded to the aspirations of the people; their feelings, needs and traditions. This is reflected on the sense of community, which is another important Islamic principle. In this sense, it is realised that the urban pattern of many historical Muslim cities has represented a multitude of decisions taken by the members of the community, through a subtle social interactions that created a balance between the rights of individuals, their neighbours and the large community. Therefore, a major quality of Islamic architecture is that it is built for people and around people, rather than having people around the architecture (Ul-Haq, 1983).

Hereunder are a few examples that can be used to discuss the implications and reflections of the Islamic law and principles to the built environment. One should remember that no detailed instructions of how to build, for example room size or door height, are given by the Quran neither the Sunnah. Rather, they give a set of general rules that help guiding architects towards what is appropriate and what is not.

A house, for example, is one of the most essential needs for human beings. To design a house one has to understand its connotations and hidden meanings. These act as effective forces in the design process. A satisfying house should respond to these forces.

A house is a perfect, residence of **tranquillity, security, sustenance, grace and blessings**. On another level, the Sacred House of God, the *Kaaba*, is called a house. God is the only Lord of this house. Other mosques are called houses of God as well (Aba Al-Khail, 1986).

A mosque is a major space in which everybody prays, no matter if he is a ruler or an ordinary individual, emphasising the notion of equality. In fact having a mosque in each neighbourhood is another reflection of equality on a different level. On another level it is not favoured to build anything above the mosque, in order to keep its privacy, sacredness, holiness and spiritual meaning (Abo Al-Agfan, 1987). For example, spiritually, it symbolises the direct connection between the worshipper and the sky with no obstacles in between, and reminds people of the soul's transition from Earth to Heaven and the eternal relationship between them. The second point is that a design may necessitate placing the toilets over the prayer area or even *Quibla*.

Simplicity is also an important issue that needs to be fulfilled. The Prophet (pbuh) preferred to keep architecture as simple as possible, having just enough to satisfy the most essential needs of daily life. Increasing luxury would mean wasting money, as stated in the Holy Quran,

> *"...and waste not by extravagance. Verily, He likes not Al-Musrifeen (those who waste by extravagance)."*
>
> (The Holy Quran, 6: 141)

Being the model to be followed the house of Prophet Mohamed was constructed in a simplistic and uncomplicated manner. Thus, living in a splendid house could cause harm to poorer people and increase the feeling of inferiority, envy and jealousy, which are not appropriate manners in Islam. However, this does not mean that the house should be devoid of decoration, but the use of decoration should be simplistic without exaggeration (Serageldin, 1989b). In this regard, it could be said that the promotion of simplicity in buildings, as a general theme, responds to the search for equality. Islam keeps the Muslim away from the temptations of life, which could lead him away from the Islamic creed and away from the act of devotion towards God (Koshak, 1985).

Unfortunately, after the Prophet's time, and during the medieval era, a number of mosques were constructed to glorify their founders, who were obsessed by extensive decoration and ornamentation. Islam's first and most important priority is to emphasise the significance of the core not the outer appearance.

Another critical issue is having a mausoleum in the mosque. It is said that, in some sense, having a mausoleum inside the mosque is against Islamic law because the construction commemorating a human being might lead to a veneration, increasing the honour paid to the dead, detracting from the truly worship of God, which leads to heterodoxy (Kessler, 1976). This opinion is supported by the saying: do not take the graves of your saints as prayer areas. However, Awad (2000) interprets this saying as what is meant by the grave is the burial place only, without any surroundings, otherwise the whole place will become graves later. Thus, there would be no place for prayer, which is against the Prophetic Hadith: "the earth has been made a purified mosque for me" (Sunan Ibn Magah – Sakhr, 1991). So, the earth is originally a place for prayer not a grave. Furthermore, the saying states that we should not take the grave as a prayer areas, confines the restriction to the grave area only. This means that a problem only arises if the mosque is built in a graveyard or over a mausoleum. Tantawi (2000) approved this opinion adding that a mosque may include a mausoleum, but has to be separated from the prayer area and away from the *Quibla*.

Another important aspect to be mentioned is the location and design of toilets in any building They should not be in the direction of *Quibla* in order to maintain the dignity of this direction. Neither may they be oriented towards *Quibla,* according to Sahih Al-Bukhari:

> *"Do not face the Quibla when you defecate or urinate, but face east or west."*
>
> (Sahih Al-Bukhari – Sakhr, 1991)

The directions of east and west are to be related to Al-Madina's geographic location to the *Quibla* direction in Makkah. This Hadith was probably said in Al-Madina.

Back to the house, which has two bold aspects that should be taken into consideration

while designing for the well being of the community; the family's privacy and the neighbour's rights, as stated in the Holy Quran,

> *"... and do good to parents, kinsfolk, orphans, Al-Masakin (the poor), the neighbour who is near of kin, the neighbour who is a stranger, the companion by your side, ...".*
>
> (The Holy Quran, 4:36)

It is important to know how Islam deals with the issue of **privacy**. The inhabitant is protected from any strange eyes that could sneak in. External privacy is fulfilled by directing the general design of the house inwards. All private affairs are held internally in the living area, reducing any chance of being seen from the outside, and strengthening family bonds and unity. In addition, the field of vision from outside the house can be obstructed by placing the windows high above eye level[5], and placing high partitions in the reception area to separate strangers from the intimate parts of the house. Another important point is the main entrance. This should not allow the field of vision to outflank the inside as the entrance of the house is directed away from the street opening onto an inner courtyard. Solid thick external walls also play an important role in privacy by increasing sound-proofing. Internal privacy is also to be regarded in design, by separating the family living area and its services from the guest-reception area, directing the private parts towards the back of the house, and using partitions to isolate vision and sound where necessary (Ibrahim, 1984). **(Figure 3-7)**.

With regard to aspects of planning in Islamic cities, some rules were established during the time of Prophet Mohamed (pbuh), some were inherited from predecessors like Hellenistic and Persian cities. This can be seen in the radical alterations of Damascus and Aleppo, where the city plan changed from ancient, highly ordered to an irregular street pattern Similarly colonnaded avenues of antiquity were converted into *Suqs*. *Sharia* deals with streets as a general right for the public. This is an important issue in Muslim law. Distinction was made between main public streets and private lands. Violation, i.e. erecting a building on the main street was completely forbidden, and if the rule was broken the building was demolished. Such incidences were very common

[5] Windows were designed in the form of *Mashrabiah* (lattice work) which enables residents to view the outside and prevent the outsider from seeing the inside of the house. It also gives shade and allows cool breezes to enter the house (Khalil, 1994).

in Tunis and Cairo. The only exception for not overruling the newly built house was if the road was wide and entirely open, and the violation was small enough not to cause a real damage. It was reported that this point was always of constant argument and even Al-Shafii was asked to judge in this matter (Al-Hathloul, 1993).

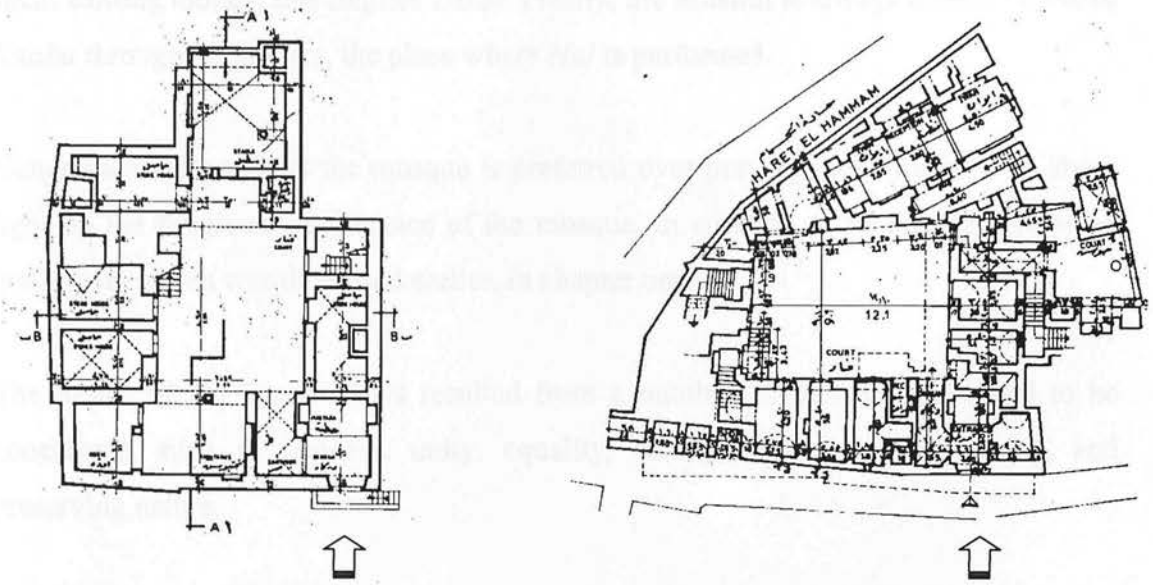


Figure (3-7) Examples of the courtyard house. (Left) House of Al-Shabshiry. (Right) Gamal Al-Din Al-Dhahabi house. Source (Ibrahim & Mostafa , 1992).

To conclude, in order to avoid any conflicts, designers should understand and respect all relevant environmental, technological, religious and cultural dimensions, especially when designing for an area with a different background to their own. For Muslim society *Sharia* is a major reference of every single detail in daily life including the built environment. The pattern of the Muslim society was also dictated by culture, tradition, heritage, beliefs and local conception.

3.7 Conclusion

Islam is a religion for all people at all times. It was delivered, preached and explained by Prophet Mohamed (pbuh). Islam has been spread all over the world across history. Islam is basically built upon five pillars: *Shahada* (testimony); *Salat* (prayer); *Sawm* (fasting); *Zakat* (alms); and *Haj* (pilgrimage).

Prayer has a particular significance, as it strengthens the link between the Muslim and God, being performed five times a day (symbolising the five pillars). Furthermore, prayer represents the other pillars, because *Shahada* is performed in prayers and *Sawm* is accomplished during prayers as Muslims are not allowed to eat or drink whilst praying. Moreover, the Muslim sacrifices his time in prayers, which could have been spent earning money, this implies *Zakat*. Finally, the Muslim is always oriented towards *Kaaba* throughout prayers, the place where *Haj* is performed.

Congregational prayer at the mosque is preferred over praying individually. This sheds light on the religious significance of the mosque, in addition to its significance as an institution, which was discussed earlier, in chapter one.

The basics of the Islamic laws resulted from a number of principles that had to be considered, such as oneness, unity, equality, community, knowledge, purity, and preserving nature.

Obviously, there is a strong integration of religious and secular life within Muslim society. The Islamic legal system is based on two main elements: *Sharia,* which is commanded by God or His Messenger, and *Fiqh*, which is grounded on the interpretation and the application of *Sharia.* Hence, it is not merely a set of rules or orders to follow, but is a system which represents this integration of religious and secular life. It is a way of living. It is not limited to the legal aspects which relate to Muslim society, but it can accommodate all physical and non-physical aspects of Muslim life. Hence, the Islamic legal system is a measure by which any issue or event can be evaluated. Accordingly, the Muslim's life can be reflected in his built environment, highlighting a number of factors to be considered at the design stage, such as simplicity, privacy, orientation etc., issues that were discussed earlier in this chapter.

This part of the thesis has established the theoretical model, this being the basis upon which the study of the mosque was built. Theories from western and oriental philosophies were introduced in chapter two and Islam, as a religion and culture, was introduced in this chapter. The next part of the thesis discusses the mosque in the light of this theoretical model.

PART TWO

DEDUCTIVE ANALYSIS OF THE MOSQUE

INTRODUCTION TO PART TWO

> *"The architecture of the mosque influenced and has been influenced by the Muslim society throughout its transformation, the fact which emphasises that the Mosque was not only a building for worship, but was far beyond that."*
>
> (Tantawi, 2000)

Part one of the thesis introduced a theoretical framework intended to enhance the understanding of the mosque as system of transformation. This section represents the core of the research and includes the analysis of the mosque in the light of the suggested framework.

It was suggested in part one, that **the mosque be studied using a holistic approach**. The mosque combines features and properties reflecting both the physical and non physical aspects. Changes in the mosque as an institution can be better understood through the people's culture, as far as they are the result of the social transformation, and therefore, the symbolic meanings and the subjective values caused by their transformation become part of the whole structure.

The issue of studying both subjective and objective aspects was discussed by Hillier et. al. (1972). He stated that when someone makes something, he puts part of himself into it. This unification between the person and an object is certainly subjective. It is common for us to put part of our symbolic meanings into our products to understand and communicate with them. Taking into consideration that people appreciate the world in terms of its symbolic sense, meanings and values, (for example will, love, dislike, preference, anxiety, knowledge, etc.). It is quite difficult to separate the form (or the object) from the symbolic aspects. As these inherently reflect cultural attitudes and satisfy the human need for aesthetics. They are the key to unity and continuity of spirit that interconnects buildings, people and culture over time.

The diachronic analysis is crucial to understand transformation. The minaret for instance won't be appreciated unless one knows its evolution. It will enrich the study if one moves from the visual language of the minaret into its symbolic origin and the genesis through the diachronic analysis. Diachronic analysis will be used to pick out a number of key issues and trace their evolution. The mosque is, basically, a place dealing not only with the past. The past, the present and the future all meet in that little 'structural centre', so that we can understand what it was, what it is and what it would be. The diachronic analysis will, certainly, include the subjective point of view, the genotype, and its interpretation of the building, the Phenotype.

Diachronic analysis will be applied to the architectural concepts and elements of the mosque, as well as its influence upon the urban structure of the Muslim city. The research will trace their origins, symbolic and cosmological attributes. The mosque has built a **genotype coming from both the objective characteristics and subjective attributes**. These rules will create a framework around which these characteristics become the ingredients of the seed, which if planted it will grow a mosque.

Mosques, however, differ in size, form, height etc. according to so many factors: the social, cultural, traditions, economical situation, basic resources, physical nature, climate, local material, building technology etc. Accordingly, to minimise the number of variables, a representative area to which the study would be applied was selected. Cairo was selected because of its rich heritage of mosque architecture.

In line with the above introduction, it will now be explained how the following chapters are organised. This section includes two chapters, chapters four and five. Chapter four describes the different layers of meanings of the mosque as well as the forces, which led to the current phenotype of the mosque, in terms of its architectural and urban contexts. Chapter five introduces the diachronic study of the mosque, incorporating its architecture and its location in terms of the spatial structure of the city, with reference to the transformation of the Cairene society.

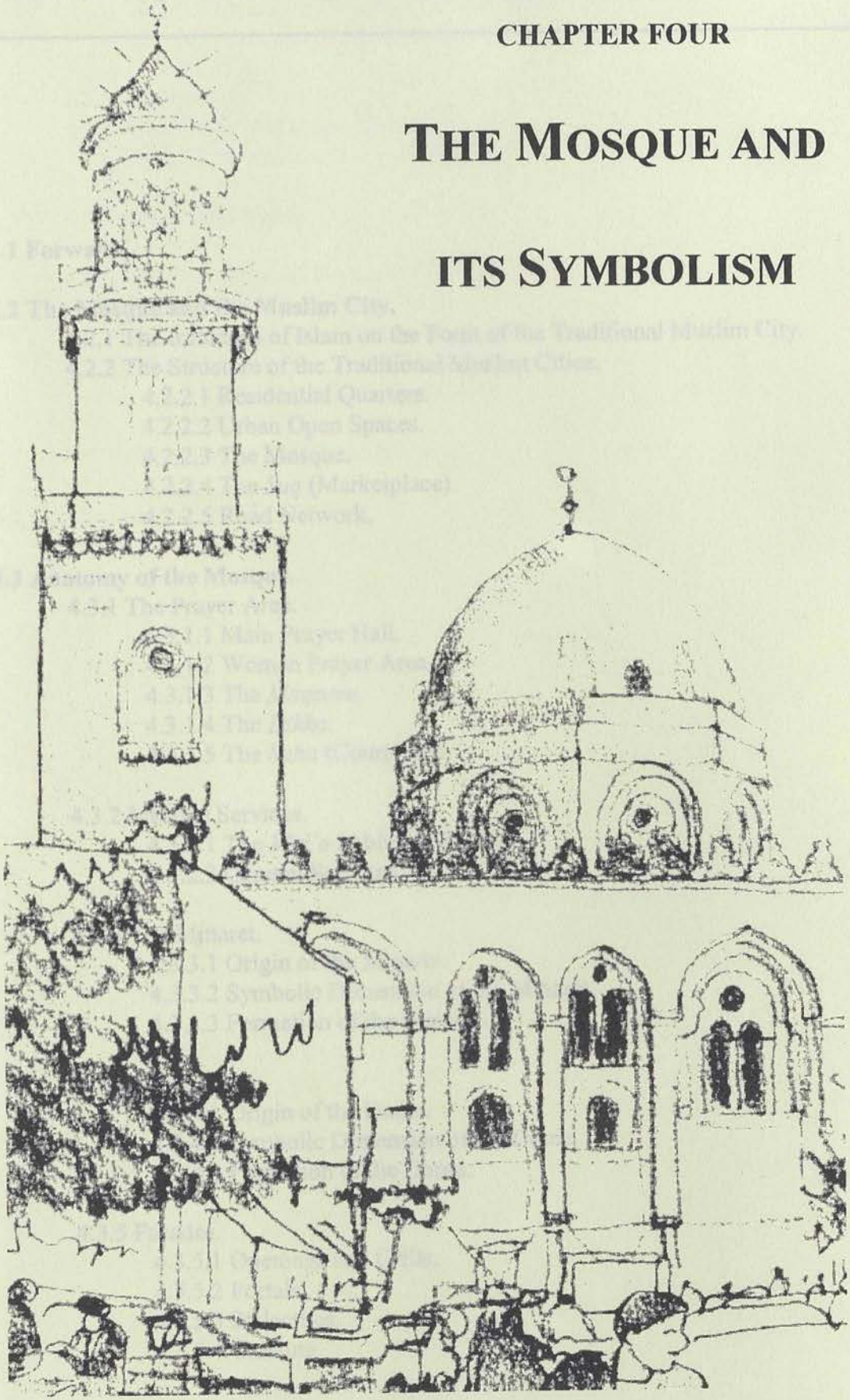
Since the study is about the introduction of a new method of understanding the role of the mosque, making distinction between the concepts of structuralism (synchronic, diachronic, deep structure, surface structure, genotype, phenotype, super-ordinate, sub-

ordinate …etc.). A number of examples will be demonstrated assuming that same methodology could be applied to the rest.

The dates of construction of the mosques will not be included within the context of the following chapters. This information will all be included in Appendix '2' at the end of the dissertation.

CHAPTER FOUR

THE MOSQUE AND ITS SYMBOLISM



4

THE MOSQUE AND ITS SYMBOLISM

4.1 Forward.

4.2 The Mosque and the Muslim City.

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CHAPTER FOUR

THE MOSQUE AND ITS SYMBOLISM

4.1 Foreword

The aim of this chapter is to apply the structuralist approach to the study of the mosque. This will be achieved by exploring its genotype at both the urban and architectural levels. The mosque is studied from a holistic viewpoint that includes all related aspects to achieve a comprehensive understanding. This will involve surface physical, and deep non-physical aspects associated with the mosque. Surface structure is described as objects within the mosque that can be experienced by our five senses. Deep structure, on the other hand, is comprised of aspects which are non tangible, that can be associated with human conception, and which in turn affect the physical environment (e.g. culture, traditions, norms and beliefs).

The mosque can not be studied in isolation from other elements in the city. The study will consider the level of urban design, understood from its socio-cultural values and the effect these have on the shape and pattern of the urban space. Urban space is the translation of the social pattern and the ideology of the inhabitants of the society as a whole. As mentioned by Hall "Spaces are not visible until one observes human behaviour" (Hall, 1969, p. 106).

The mosque had very important role in organising the urban fabric of the traditional Muslim City, giving it very powerful social and cultural influences. Thus, an understanding of the structure of the traditional Muslim City will shed light on these influences and their consequences on both the urban and architectural levels.

In this chapter a study of the architectural elements of the mosque will be discussed. Not every single aspect, but the major aspects that will formulate the genotypic framework of the mosque. This assumes that the same study would apply to mosques elsewhere. The phenotype of the mosque emerges from function, concepts, origins, symbolic and semantic meanings, because these are subjective rules of the structure. However, elements will be studied independently to facilitate understanding the deep level of each. In other words, the research explores the genesis and the meanings of the different elements of the mosque. The flowing symbolic meaning, or quality, of the elements of the mosque is the ground of their wholeness. The role of the mosque has taken one of the most fundamental principles in Islam, namely unity, and thereby sought to integrate all its features together in order to achieve it.

Accordingly, this chapter begins with a study of the traditional Muslim City, its structure and the influence of Islam in general and the mosque in particular on its formation. Then follows a study of the architectural elements of the mosque, including the prayer area, services, minaret, dome, facades, *mihrab*, *minbar*, arches and vaults, the decoration and eventually the illumination of the mosque.

4.2 The Mosque and the Muslim City

The Islamic system forms an integrated network between the secular and religious life. This distinction was not known in the early days of Islam, because Muslims took it all as one united indivisible whole. It is true that there are certain elements within the tradition of Islam that seem to be more inclined to the secular, nevertheless, they never abandoned the sacred dimension. However, one can claim that Islamic traditions bounded individuals, classes, and groups into a whole process of life in the Muslim City.

This pattern of cohesion is reflected on the Muslim City on degrees of applications within the built environment where one can visualise how Muslims lived within the boundaries of Islam. In other words, this type of Islamic environment appeared within the traditional Muslim City, and is a reflection of the application of Islamic ideology as a way of life by both the authority and the society. This does not mean that the traditional Muslim city is the 'perfect' example or the 'ideal' model which needs to be

followed in the present time, but it is rather an example of how Islamic belief and its principles can be reflected in the Muslim built environment. This implies that Muslim planners could distil these principles from the traditional Muslim City and apply it today.

The mosque has a symbolic level towards the urban structure of the Muslim City. This relates to the spatial location and role of the mosque towards the rest of the spaces of the city: integration into the structure of the city, domination, display, accessibility, etc. In the following section light is shed on the influence of Islam in general and the mosque in particular on the form of the Muslim City.

4.2.1 The Influence of Islam on the Form of the Traditional Muslim City

One of the most remarkable features of the Islamic tradition is its predomination in cities. Islam from its early times had a very strong urban emphasis, and throughout its spread it supported a development of urban life. This resulted in social solidarity. Being based on religion, it produced conventions of physical form, which is unique in nature to the Muslim City and led to the rise of urbanisation in the Islamic world. This social solidarity is realised in integrated communities with distinctive sense of unity and social cohesion. Muslims, guided by their scholars, rationally built their society on the basis of Islamic religious and social teachings. One of these effective Islamic principles was the rejection of any distinction of race and social class, in contrast it encouraged strong bonds of brotherhood and solidarity amongst its followers.

All laws of the urban structure of the traditional city were basically obtained from the Quran and the Sunnah. This is why the urban characteristics of most traditional Muslim cities share great similarities. In general, the Muslim City was the product of *fiqh* because the mechanism of interpretation and implementation of *sharia* took place within the process of urban development of the traditional Muslim City. The primary sources of *fiqh* (Quran and Sunnah) were vital for transferring the *sharia* into design and planning criteria (Llwellyn, 1980).

A major principle, which is also a prophetic declaration, emphasised in planning traditional Muslim cities, is 'neither *dharar* nor *dhirar*'. This means there should be neither harming nor return of harm. This principle was a planning policy understood as since there was no violation, everything was accepted. In other words, one might plan the built environment as long as no harm was made to others. For example, if constructing a building in a public road would cause harm to passers by, it should not be built. Hence, planners should provide all means to fulfil people's rights in the built environment and facilitate the well being of the Muslim society (Mortada, 1992).

In general, these laws became later design and planning principles, or a genotype for the Muslim City that were later followed in most traditional Muslim cities. The setting of these laws was supervised by the Caliph himself, while the ruler's deputies were responsible for the streets order and regularity, in terms of urban, constructional, environmental, commercial and social aspects (Ibrahim & Mostafa, 1992).

Planning laws were developed within the context of the city, and many of the regulations regarding worship presuppose an urban setting. The mosque itself, was in many respects a pillar of urban life. That is why it could be assumed that the traditional Muslim city fulfils both the religious duties and the social ideals of the inhabitants (von Grunebaum, 1976).

The Muslim City in its deep level maintains privacy, equality and unity. First, privacy is applied on different levels, the bent streets and split-levels, as well as the restricted placement of external doors. Privacy is also applied in the architectural treatment of windows in terms of the height and location especially of those overlooking neighbouring property, as not to visually violate their privacy. The limit on building heights throughout the city, and the introvert design of houses overlooking a courtyard sustained this sense too.

Equality is observed in the emphases of homogeneity in the general urban fabric of the city, where buildings are of similar height and size as well as being connected to each other. In addition, similarity in outer finishing materials, most of which were local, emphasises this notion. All in all, this pattern expressed homogeneity of the street as a

whole. This also raised unity, which was respected from the outside respecting Islamic values, in that residential quarters were not divided on an economic basis and each quarter accommodated wealthy as well as poor people (Ibrahim & Mostafa, 1992). Another notion which signifies unity is the central congregation mosque, which represents an expression of the unification of the whole city under one central religious entity, such as the case of the Mosque of the Prophet (peace be upon him) in Al-Madina, Al-Zaitunah Mosque in Tunis, Al-Azhar Mosque in Cairo as well as many others. The following discussion explains the structure and components of the Muslim City to be studied in the light of the above discussion.

4.2.2 The Structure of the Traditional Muslim Cities

As mentioned earlier, the concept of social solidarity among people is an essential principle of planning the Muslim built environment. In essence, the built environment should provide the means that improve social relationships.

The Muslim City is comprised of a system of public, semi-public, and private elements. The main public elements within the traditional Muslim city include mosques, *madrasa* (school or college), *suq* (market), *bimaristan* (hospital), *hammam* (public bath), ... etc. Semi-public spaces are spaces that are used by a number of people but not open to the rest of population such as the *harah*, which will be addressed in more details later in this chapter. Private spaces are simply the residential quarters, which are briefly referred to in the following section. The mosque and the market place are the public buildings analysed in this section due to their special influence on the spatial structure of the Muslim cities **(Figure 4-1)**. They are going to be addressed merely from the spatial perspective, without going through their detailed composition.

In general, the traditional Muslim City is characterised by the congregational mosque and the *suq* located in the city centre, followed by subdivision of lands into residential quarters or *Khitat*. Then came roads with their different widths, the main roads called '*Al-Manahij*' (pl. of *Manhaj*); followed by *Hawari* (pl. of *Harah*), *Aziqah* (pl. of *Zuqaq*), *Durub* (pl. of *Darb*), or *Tariq Ghair Nafidh* (cul-de-sac) (El-Kassar, 2001).

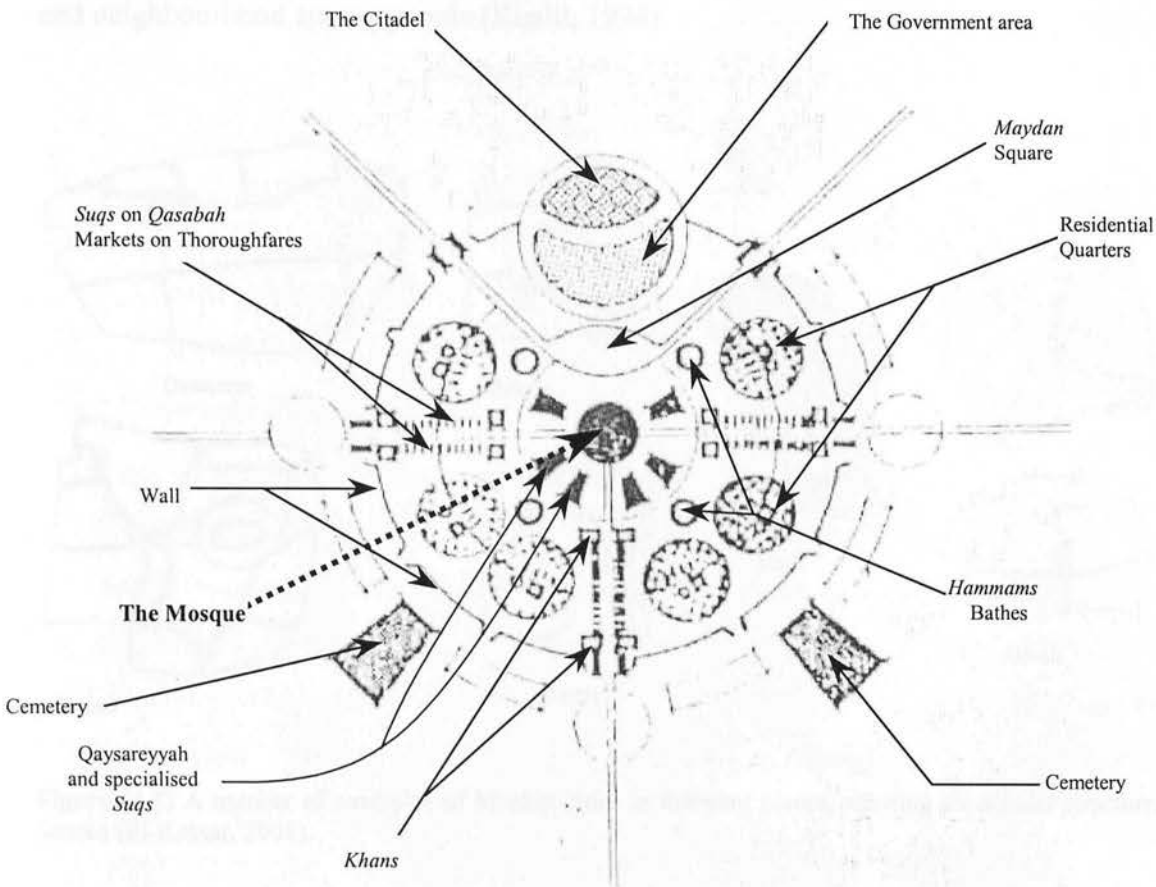


Figure (4-1) A schematic representation of an early medieval Muslim city. Source (Ismail, 1972).

In regard to buildings' heights, they were defined by a number of factors related to road widths, such as taking into account provision for shade. The second factor relates to the construction systems. Third, the socio-cultural characteristics, e.g. maintaining the privacy of neighbours. Finally, a religious aspect, ensuring the minaret of the mosque is the highest point in the city, as will be discussed later in this chapter. All these factors limited building heights to between two and four storeys (Ibrahim & Mostafa, 1992).

4.2.2.1 Residential Quarters

Khittah is the Arabic name for the residential quarter. The traditional Muslim city was divided into quarters, usually located around the centre, and based on aspects such as ethnic, tribal and craft occupational bases. Because Islam forbids social discrimination on economic bases, signifying the dominance of social equality, division was never decided on an economic basis, with neighbourhoods including communities of both rich and poor without any separation. This maintains the social solidarity of Muslim society by uniting all members of the society together, emphasising the concept of brotherhood

and neighbourhood among people (Khalil, 1994).

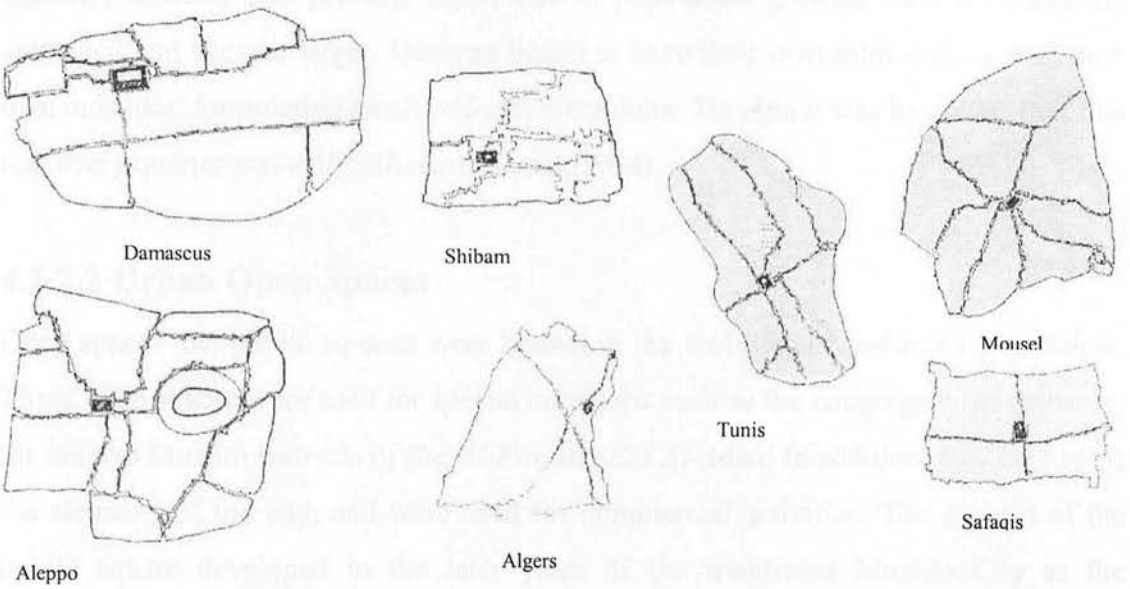


Figure (4-2) A number of examples of Muslim cities in different places, showing the similar structure. Source (El-Kassar, 2001).

With reference to the tribal division, this was undertaken for historical reasons. Before Islam Arabia consisted of many different tribes. Realising and respecting that those tribes had slightly different, though homogeneous, backgrounds, Islam unified these separated tribes under the one umbrella. With no obligation, Muslim planners considered their preference to live close to each other and assigned a quarter for each, which differed in size according to its population. Consequently, people from a particular quarter had a strong feeling of communal solidarity with reciprocal obligations, maintaining strong ties among them. This in turn assisted social solidarity between the tribes, and hence, of the entire society (Mortada, 1992).

Division of quarters was, sometimes, related to craft occupation not income level, reflecting homogeneity in the urban image of the traditional Muslim city. Examples of such solidarities can be seen in *Al-Nahhasin* (coppersmiths), and *Al-khayyamiyya* (tent quilters) (Ibrahim & Mostafa, 1992).

However, *harah*, in some cases, formed an independent solidarity within the city, where a gate was erected and the whole *harah* closed at night. This resulted from the

homogeneity of the residents, and from the domination of some socio-cultural aspects i.e. responsibility toward neighbours, mutual interdependency, social solidarity, unity, equality, modesty and privacy. Later, due to population growth, residential quarters expanded and became larger. Quarters began to have their own mini centres with their own mosques, formulating small self-sufficient units. Though, it was by no means a rule that every quarter was self-sufficient (Khalil, 1994).

4.2.2.2 Urban Open Spaces

Open spaces and public squares were known in the traditional Muslim City as *Sahah.* These open spaces were used for special occasions such as the congregational gathering for the two Muslim festivals of *Eid Al-Fitr* and *Eid Al-Adha.* In addition, they connected the elements of the city; and were used for commercial activities. The concept of the public square developed in the later years of the traditional Muslim City as the population grew. Other smaller *Sahat* (pl. of *Sahah*) or urban squares existed within neighbourhoods and quarters (Khalil, 1994).

4.2.2.3 The Mosque

The mosque is considered to be the super-ordinate structure in the traditional Muslim City, where all other elements of the city are strongly connected. It was usually situated at the centre, so all Muslims could easily gain access to it. This central position was indicative of the primary importance of religion in urban life.

The mosque, in fact, was a radiant centre in the early times of Islam. It functioned as a religious entity, a court of justice, and an intellectual and educational centre as well as a government centre. It was also a place of social activities, which represents the integration between religion, and secular aspects within Muslim life. Both aspects (religious and secular) gave the mosque this position at the heart of the city, occupying its physical centre.

The significance of the mosque is reflected in the pattern of urban fabric around it and the number of streets leading to it. The concentration of activities around the mosque such as *aswaq* (pl. of *suq*) and *madares* (pl. of *madrasa)* is also a representation of the

importance of the mosque. This is also obvious in the building heights, as the minaret was the highest construction in the city, even if the mosque's height is equal to that of adjoining buildings, which denotes the significance of the mosque. The minaret then became the focal point and visual landmark and, together with the dome, characterised the skyline as a prominent visual aid to orientation in the city. The mosque also influenced the structural density around it, as it started from its minimum around the mosque and increased gradually until it reached its maximum at the parts away from the mosque (Ibrahim & Mostafa, 1992).

Throughout history, it is realised that the mosque signifies a sense of unity among Muslim society through its role, function, significance, its location in the centre of the city, and its orientation towards Makkah, connecting the city residents to the whole Muslim society.

4.2.2.4 The *Suq* (Marketplace)

Suq, Bazar, Swiqah, Qaisariah, Khan and *Wikalah* are different types of the marketplace within the traditional Muslim City that were the scene of intense social interactions. It was located in the city centre next to the mosque indicating a strong relationship between both, again signifying the balance between the secular and the spiritual in Islamic ideology. However, markets had an organisation of their own based on the segregation of the various trades and crafts, arranged in a hierarchical level in terms of their proximity to the mosque. The closest level to the mosque was occupied by bookshops and perfume products. The second category was placed farthest away due to the noise (e.g. copper making), bad smells (e.g. leather tanning) or to their symbolic content (e.g. footwear products). The third category is neutral and was located, relatively, anywhere within the hierarchy, examples of such category are cloths and jewellery[1] (Hakim, 1988).

Prophet Mohamed (pbuh) assigned the location of the first market place in Al-Madina in an open space without any buildings. This pattern of shopping place was repeated in the later Islamic Cities such as Basra, Kufa and Fustat. Then, during the reign of the

[1] Such organisational rules is very difficult to be applied to a city such as Cairo because of the complexity of the stages that were involved in its growth, as will be elaborated in more details in the next chapter.

Ummayyid Caliph Mua'wiya Ibn Abi Sufian (661-680AD) it was developed and buildings started to take place within it (El-Kassar, 2001).

4.2.2.5 Road Network

The connection between the mosque and the rest of the city is via a certain number of major thoroughfares radiating outwards from the central mosque. These thoroughfares are of equal importance to the mosque itself, because only through them can believers reach the mosque.

Streets in the traditional Arab City, even before Islam, had a particular social significance, with the public life of society being clearly observed upon them. People met in the streets, talked to each other and spent some time with friends. Prophet Mohamed (pbuh), in advising his companions, told them to avoid sitting on the streets, but they said that it was difficult to do this because it was their gathering place. He replied it was acceptable if one avoided staring at passers by, did not cause any harm, to salute those who salute you, and to bid honour and forbid dishonour (Khalil, 1994).

The mosque played an influential role in the organisation of the streets leading to it. One of the reasons was that this was the main route used by Caliphs used to reach the mosque. As a result, local commercial activities were attracted to the sides of such routes, and these were classified into specialised sectors, depending on the kind of services provided (Ibrahim & Mostafa, 1992).

The shape and widths of roads in different Muslim cities, whether straight or winding, was developed into slightly different forms depending on a number of factors i.e. location, climatic elements, social relationships among neighbours and water resources. Generally, road widths were defined according to traffic capacity. Roads in the city centre and main markets were wide. In contrast, streets with fewer links and of less importance were narrow. Proximity to the city centre is another factor that affected the capacity of traffic on roads: central roads were used by a large number of pedestrians, so they became wider; on the other hand, roads far from the centre were used by fewer pedestrians, so they became narrower. Finally, roads were constricted at junctions between buildings (El-Kassar, 2001).

Roads in traditional Muslim Cities had a diversity of names depending on the type, size, location, use and function, as well as limitations. They also reflect the weight of the relationship between the elements they connect within the traditional Muslim City.

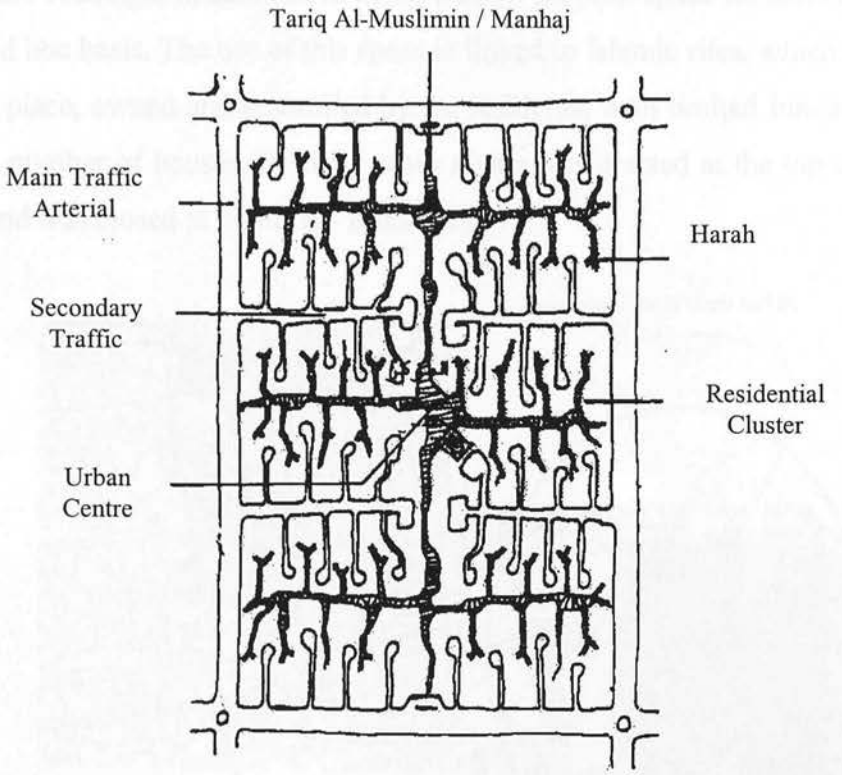


Figure (4-3) A schematic sketch showing different types of roads in the traditional Muslim City. Source (Ibrahim & Mostafa, 1992).

Manahij (pl. *Manhaj*) are the major city's thoroughfares. They are also called *Nahj, Tariq Al-Muslimin or Qasabah.* They connect all major city gates with the important elements at the core of the city, e.g. the mosque, *Dar Al-Imara* and the *suq,* as well as connecting different neighbourhoods to the city centre and to the gate. *Al-Manahij* were usually the widest type of streets. They were tortuous and followed a uniform sequence, which started from the mosque and the market place, where the high density of public space is located, then passed by the neighbourhoods of lower density, ending up at the city gate. This helped in finding the way to the mosque through winding streets (Khalil, 1994).

The second type of street was generally narrower than *Tariq Al-Muslimin*, although its

width varied depending on its location, function and the elements it connected. Sometimes these finished in a dead-end or acted as a cul-de-sac. These had different names including *Harah, Zuqaq, Darb, Tariq Ghair Nafidh* **(Figure 4-4)**. Dead-end streets had a significant social and cultural role. Children used to play in them; women gathered there in the mornings when the men were at work; men met there after work and in the evenings; in addition to being a multi purpose space for local residents to use on an ad hoc basis. The use of this space is linked to Islamic rites, which consider it as a private place, owned and controlled by the residents, with limited function in serving a limited number of houses. In many cases a gate was erected at the top of the dead-end street and was closed at night (El- Kassar, 2001).

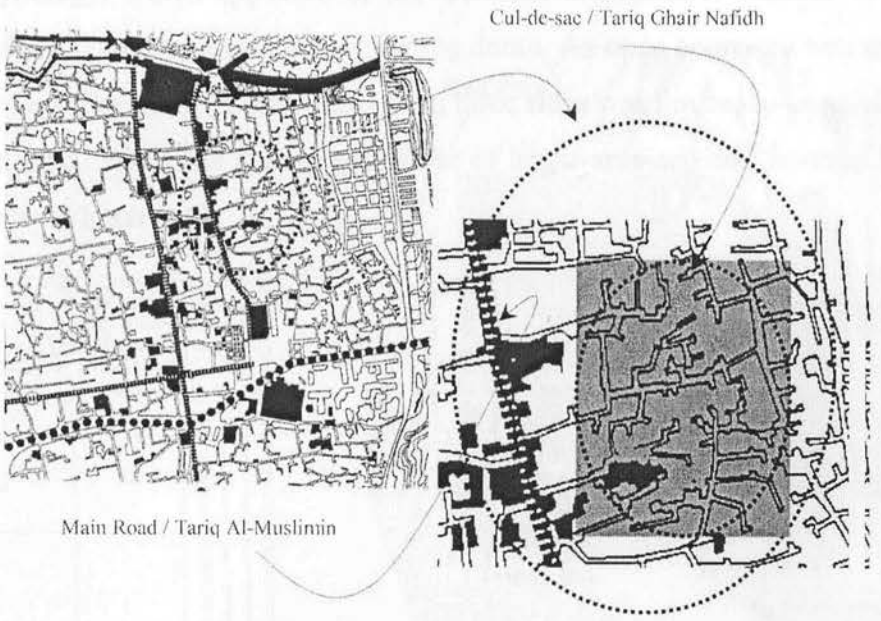


Figure (4-4) An example of the road system in the old city of Cairo. Source (El-Kassar, 2001).

4.3 Anatomy of the Mosque

Generally, the mosque is rectangular in plan, surrounded by a wall providing quiet and privacy for praying worshippers. Gabr (1992) argues that mosques are sacred sub-centres, horizontally connected to the *Kaaba*, which in turn is vertically connected to the Heavens.

The mosque has different typologies in terms of its architectural formation. The typology depends on the period and the area it was built in. Hereunder, the discussion considers the most relevant typologies. Generally, most of the mosques in the Eastern

Islamic world are based upon the *riwaq* type mosque, which consists of a central courtyard surrounded by four *riwaqs*, having the *riwaq* in the *Quibla* direction as the deepest. *Riwaqs* overlooked the courtyard through the arches that are supported on columns, as every riwaq would act as a side to the courtyard **(Figure 4-5)**.

Another major development of the mosque was the evolution of the design into a form with four *iwan* around a major courtyard **(Figure 4-5)**. The *Iwan* is an enclosed rectangular area open only from one side, and usually roofed by a large vault. It was mostly used in '*Madrasa*' and '*Khanqah*' (Shiha, 1992).

A third typology, which appeared in the Ottoman architecture, consists of a single, central space covered by a central dominating dome. An open courtyard was surrounded by four *riwaqs*; the width of the *riwaqs* from three sides was limited to one aisle covered by small domes. While the *Quibla* space was of larger area and was covered by a large central dome **(Figure 4-5)**.

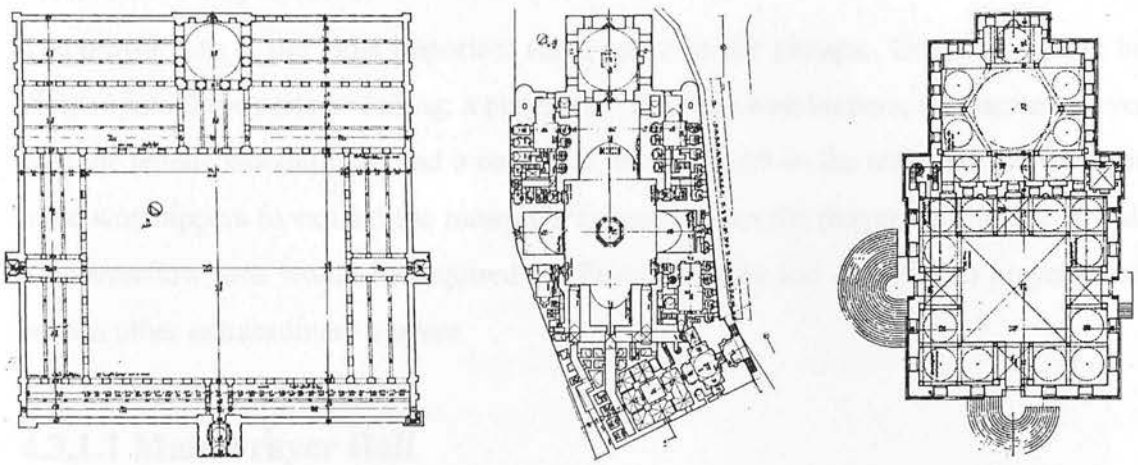


Figure (4-5) Different architectural typologies of the mosque. (Left) Riwaq typology, Al-Zahir Baybras Mosque. (Centre) Iwan typology, Sultan Hasan Madrasa. (Right) space with central dominating dome, Queen Safiyya Mosque. Source (Ibrahim & Mostafa, 1992).

Throughout the following pages the discussion explores the anatomy of the mosque, illustrating its major external and internal components, including its origins and meanings.

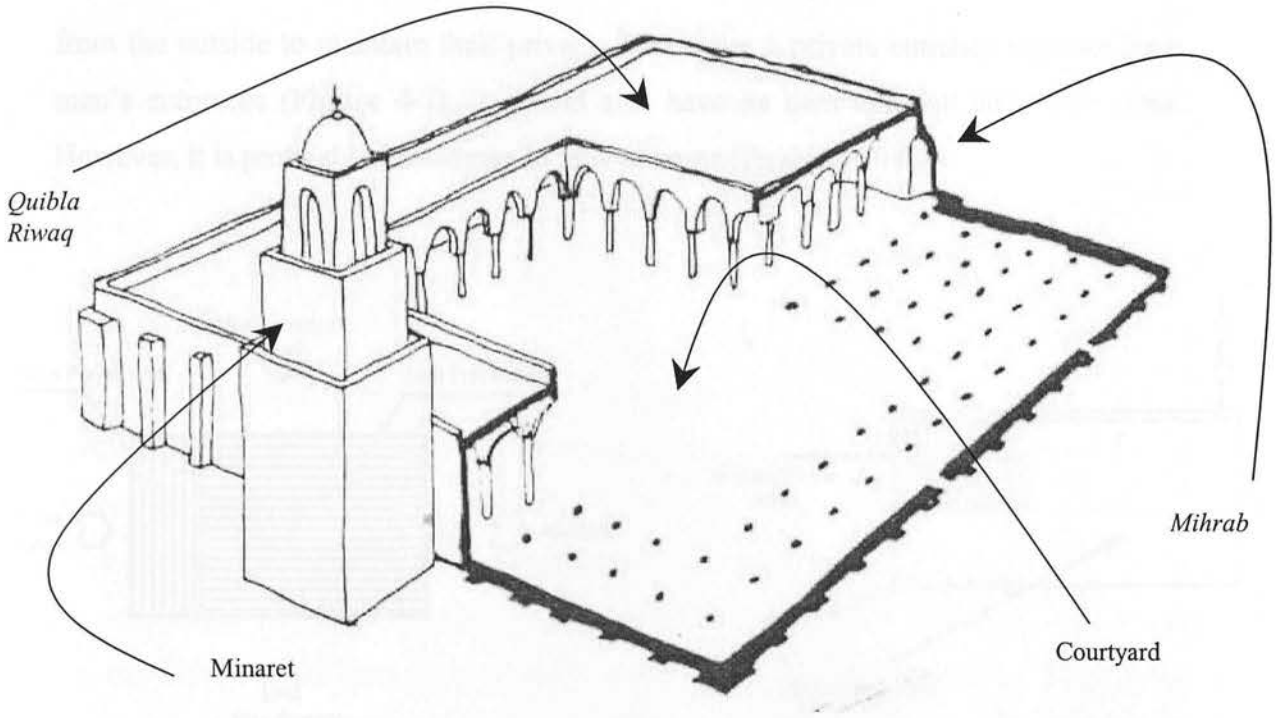


Figure (4-6) General view of the mosque. Source the researcher based on (Antoniou, 1981).

4.3.1 The Prayer Area

The prayer area is the most important ritual space in the mosque. Generally, it can be divided into three parts including: a prayer hall for male worshippers; a separated prayer area for female worshippers; and a courtyard area adjacent to the male worship area for male worshippers to expand the mosque's capacity when the prayer hall itself is filled. This overflow area would be required for Friday prayers and *Eid* (Feast) prayers, and certain other extraordinary prayers.

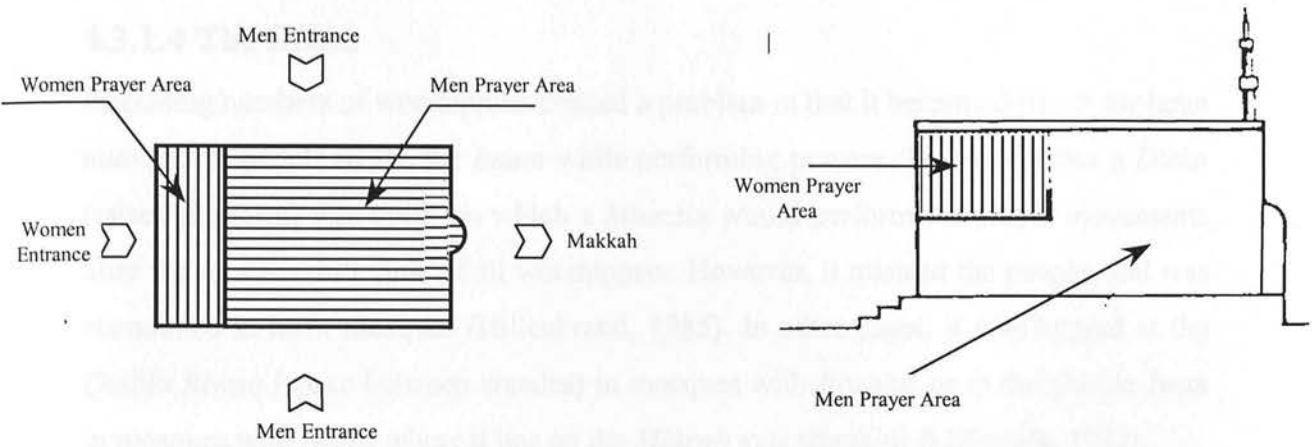
4.3.1.1 Main Prayer Hall

The male worshippers area, the roofed part adjacent to the *Quibla* wall, is usually occupied by *Quibla Riwaq* or *Quibla Iwan* (depending upon the typology of the mosque). The side away from the *Quibla* wall overlooks the courtyard. However, in a mosque without a courtyard the prayer hall occupies the total area of the mosque. It includes the *Quibla, Mihrab, Minbar, Maqsura* and could be covered by domes.

4.3.1.2 Women's Prayer Area

The women's prayer area is a small isolated space located at the rear of the mosque, either at the same or at a higher level. The interior of the women's prayer area is hidden

from the outside to maintain their privacy. It also has a private entrance separate from men's entrances **(Figure 4-7)**. It should also have its own ablution and toilet areas. However, it is preferable for women to pray at home (Ibrahim, 1984b).



- Women Prayer Area could be at the rear of the mosque, separated from men's prayer area. Whether in the same level or in different level.
- Entrances should be separated.

Women Prayer Area in an upper Level.

Figure (4-7) Sketches illustrating the location of the women prayer area. The researcher based on (Ibrahim, 1984b).

4.3.1.3 The *Maqsura*

The *Maqsura* was a place for the ruler, sometimes it was large enough to accommodate his servants and followers, that keeps his privacy and enables him to participate in prayers[2], and was of no religious significance. It was usually very close to the *Mihrab*, as seen in the Ummayyid Mosque in Damascus, having a door beside the *Mihrab* connected to the royal palace from one side, and to the *Maqsura* from the other side. Hence the ruler could go to the Mosque without meeting other worshipers. Baybers Mosque is one of the Cairene examples of the use of *Maqsura*. *Maqsura* has occasionally been used as a treasury to keep and preserve valuable things (Kuban, 1974).

However, the *Maqsura* was not used very often, and as a result there are very few surviving examples (Hillenbrand, 1985). This may be due to the fact that the *Maqsura*

[2] This was done through the *Mashrabeyya* (wooden latticework) that keep the occupant away from the worshippers and allow him to see them and participate in prayers.

created a separation between the ruler and his people. This had two negative consequences. Firstly it is considered to be against the principle of equality, and secondly it weakened communication, continuation and integration between these two groups.

4.3.1.4 The *Dikka*

Increasing numbers of worshippers created a problem in that it became difficult for large numbers of people to see the *Imam* while performing prayers. To remedy this a *Dikka* (raised platform) was built, on which a *Muezzin* would perform the prayer movements after the *Imam* in full view of all worshippers. However, it mislead the people, and was abandoned in most mosques (Hillenbrand, 1985). In other cases, it was located at the *Quibla Riwaq* (space between arcades) in mosques with *Riwaqs*, or in the *Quibla Iwan* in mosques with *Iwans* where it lies on the *Mihrab* axis (Ibrahim & Mostafa, 1992).

Mamluks used marble *Dikkas* as in Sultan Hasan Madrasa. Stone *Dikkas* carried on marble posts were also used, as in Shaikhu Al-Nasiri Mosque. Next the Ottomans located the *Dikka* very high at the wall opposite to the *Mihrab,* as in Sinan Pasha Mosque **(Figure 4-8)** (Ibrahim & Mostafa, 1992).

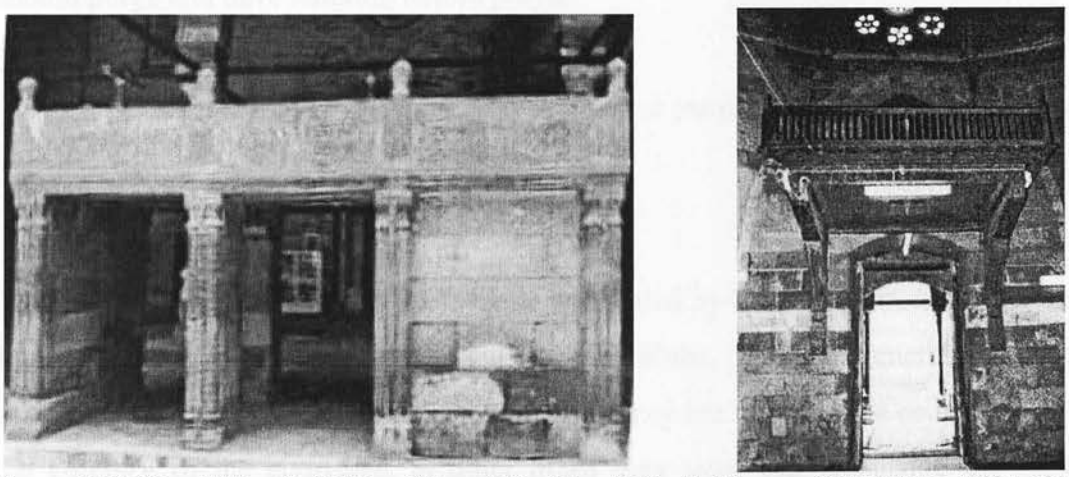


Figure (4-8) The *Dikka*. (Left) The *Dikka* of Shaikhu Al-Nasiri Mosque. (Right) The *Dikka* of Sinan Pasha Mosque. Source (Ibrahim & Mostafa, 1992).

4.3.1.5 The *Sahn* (Courtyard)

The courtyard is a large central area surrounded by arcades or a flat roofed portico

sometimes on three sides but mostly on four. It also has a particular climatic significance, especially in hot weather as in Arabia (Hillenbrand, 1985). In addition the court gives, with its four sides, a sense of stability to the construction. Finally, it symbolises the link between the earth (the mosque) and heaven.

4.3.2 Mosque Services

The services of the mosque include ablution spaces, Imam room, stores etc. the discussion below elaborates on some details concerning these services.

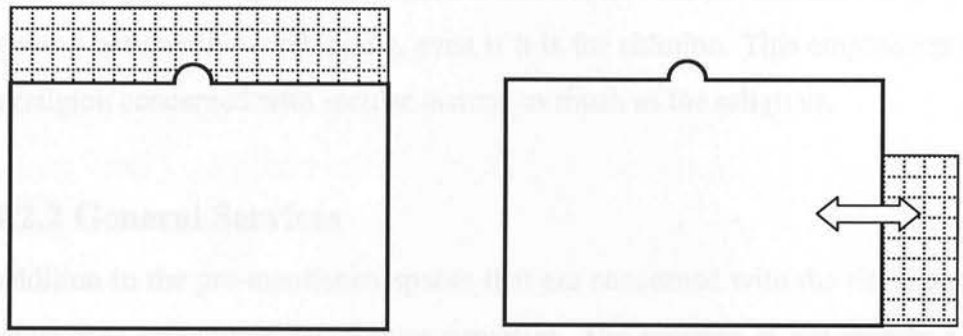
4.3.2.1 The *Mid'a* (Ablution Place)

Islam has emphasised personal hygiene and associated it with prayer. Worship in Islam requires purification and ritual ablution prior to performing prayers. This is dependent upon the availability of running water, due to the impurity of the still water. However, ablution may be performed using sand when water is not available. Ablution consists of washing: hands, mouth, nose, face, arms, head, ears and feet. This ablution could be performed at home, mosque or elsewhere. Therefore washing facilities are usually available in the mosque in an area called the ablution space, which is *Mid'a* in Arabic, derived from the word *Wudu*, which means to purify and obtain ablution (Prochazka, 1986). This issue is clearly attributed in the Word of God in Tauba Sura, that man should purge and have ablution before prayer:

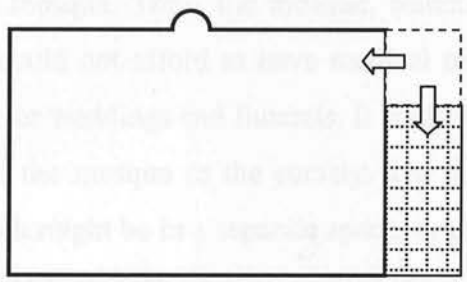
> *" ... In it are men who love to clean and to purify themselves. And Allah loves those who make themselves clean and pure"*
>
> (The Holy Quran, 9:108)

The first ablution space within the mosque was added by Caliph Omar, while the first in Egypt was attached to the mosque of Ibn Tulun (Shiha, 1992). In general, the ablution space might have different locations; sometimes they are found in the courtyard, or near the entrance of the courtyard, at other times they were placed outside the mosque. However, if the ablution space was located in the courtyard or was an integral component of the mosque composition, they do not include toilets and only serve as ablutions. If they were located outside the mosque, toilets may be included, so as to keep waste or impurities outside the mosque (Prochazka, 1986).

It should also be noted that wherever the ablution spaces were, their location was carefully studied so that they were never directed towards the *Quibla*. It was also important to avoid the transfer of bad odours to the mosque through considering the direction of the prevailing wind or provision of good ventilation, particularly if having attached toilets (Shiha, 1992).



Bad locations for the ablution place.



Better treatment for the ablution place.

Figure (4-9) Sketches illustrating the location of the ablution place. The researcher based on (Ibrahim, 1984a).

The ablution space and fountain denotes water which symbolises life by all means as came in the Quran:

" ... And We have made from water every living thing ...."

(The Holy Quran, 21:30)

" And Allah sends down water (rain) from the sky, then He revives the earth therewith after its death ..."

(The Holy Quran, 16:65)

" ... and sent down water (rain) from the sky and brought forth therewith fruits

as a provision for you ..."

(The Holy Quran, 2:22)

" ... and He caused water (rain) to descend on you from the sky, to clean you thereby and to remove from you whispering evil suggestions of Satan ..."

(The Holy Quran, 8:11)

In this sense, the mosque is associated with life, this means that the mosque is a place for living not merely worshipping, even if it is for ablution. This emphasises that Islam is a religion concerned with secular matters as much as the religious.

4.3.2.2 General Services

In addition to the pre-mentioned spaces that are concerned with the ritual activities the mosque also accommodates secular activities. The mosque is not merely a place for worship, it is highly integrated with society. This is, obviously, reflected in the architecture of the mosque. Thus, the mosque, sometimes, included an infirmary for poor people, who could not afford to have medical treatment elsewhere, and a multi-purpose social hall for weddings and funerals. It could also contain a library to maintain the cultural role of the mosque to the society. The mosque may be connected to an education hall, which might be in a separate space, or part of the prayer hall. Sometimes the mosque contained student accommodation or accommodation for a caretaker. Furthermore, the mosque contained rooms for *Imam* and *Muezzin* (the man who calls for prayer), which was located in a place that enabling them to reach the *Minbar* directly without passing through rows of worshippers (Ibrahim, 1984a).

4.3.3 The Minaret

It is argued that the minaret is the mosque's most important element in terms of external formal identification, recognition and symbolism, as it could not be found in any building other than the mosque.

The minaret is an elevated structure used by the *Muezzin* to call for prayers. A lantern is attached to the top of the minaret to announce the start and the end of fasting during the Holy month of *Ramadan*. The height of the minaret used to be within the range of the

human voice to be clearly heard by the crowds below. High minarets may also have been constructed, since height, beauty and the number of the minarets were considered a matter of a pride, richness, superiority and power (El-Gohary, 1984). In general, there were two major factors affected the minaret's height, the building material and the building experience. With regard to their number within the mosque, there was no governing rule, and there are mostly one or two in Cairene mosques (Abouseif, 1985).

4.3.3.1 Origin of the Minaret

To trace the origin of the minaret one should first understand the history of the *Adhan.* Like the Jews used a horn and the Christians used a bell to announce prayer times, Muslims soon developed their own system, and a call for prayer was delivered from the highest roof building by Bilal Ibn Rabah. This practice continued from generation to another until today (Hillenbrand, 1944).

The minaret appeared late in Islamic architecture, but has dominated mosque design since its appearance. Historically the appearance of the minaret refers to the Ummayyids, who built their mosque over the ruins of a Byzantine Church, which in turn was constructed over an old temple. One of the remaining elements of the church were the four square based towers; that were used for lighting and watching. These towers were left on their original positions so as to serve for prayer call (Sameh, 1982).

These towers became a prototype for those that followed. The next minaret was erected by Caliph Mua'wiya, as a stone tower added to the mosque at Basra, upon the request of his governor in Iraq Ziyyad Abihi. Then the Egyptian governor Maslama Bin Mokhled called for the construction of four minarets at the corners of the mosque of Amr at Fustat. The Ummayyid also constructed four corner towers at the mosque of the Prophet in Al-Madina during their renovation of the building in the first decade of the eighth century (Bloom, 1991).

In general the minaret passed throughout so many transformations and developments throughout its history. These developments differed from place to place and from time to time. One of the earliest minarets is the remarkable spiral minaret of Samarraa in Iraq (847 AD), which had an ancient Mesopotamian ziggurat influence, having a cylindrical

shape with an external spiral ramp **(Figure 4-10)**. During the ninth century, it was also adopted by Ibn Tulun in Egypt, with some modifications, which will be illustrated in the next chapter. Another was the Ummayyid square tower of Syria that was destroyed in (1174 AD) and was soon replaced by the present minaret **(Figure 4-10)** (Hillenbrand, 1944).

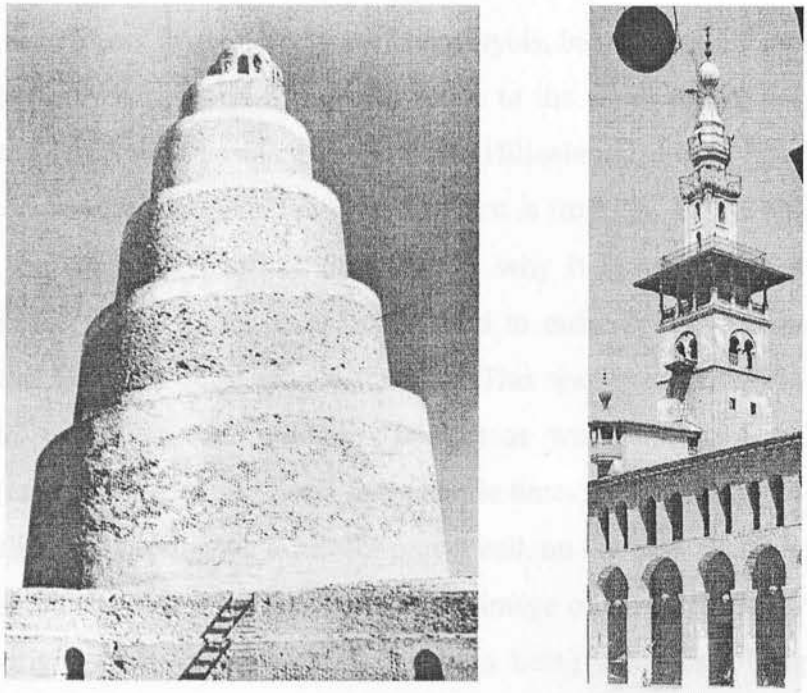


Figure (4-10) (Left) The minaret of Samarraa in Iraq. Source (Kuban, 1974). (Right) The present minaret of the Ummayyid mosque in Damascus. Source (Stierlin, 1996).

As for the Cairene minarets, the German scholar Thiersch connected their origins to the lighthouse of Alexandria, the Pharos, building his theory upon the similarity between both of them, each having three stories. His theory was upheld until Creswell argued that the three-story minaret did not appear before the fourteenth century, by which time the Pharos had been decayed for at least two centuries. Then arranging the material in chronological order, he reached the conclusion that the octagonal type of minaret came from Syria to Egypt and that the Pharos played no role in its evolution. The Cairene minaret passed through many stages of transformation until it reached the current form (Bloom, 1991).

In regard to the location of the minaret, its location was decided through the designing of the façade, and was part of the process of the overall design of the mosque in an

urban context.

As for the etymology of the minaret, there are three Arabic names associated with the minaret, depending on the region. These names were *Sawma'a, Manara* and *Ma'adhana.*

The term *Sawma'a* was firstly used by the Ummayyids, but was mainly (and presumably still) used in North Africa and Spain, and refers to the small square cell used by the Christian monks of Syria to seclude themselves (Hillenbrand, 1985). Then the *Manara* can be derived from two linguistic origins. The first is from the Arabic word *nur*, which means light or *nar*, which means fire. That is why it is sometimes known as the lighthouse or the signal tower, since it was used to make fire signals, as well as for celebrating the *Eids* and other special festivals. This was even in use before Islam to guide people, as well as for military purposes as was common practice with the Byzantines (in North Africa and Syria into Islamic times). Thus, the word *Manara* was used by Muslims to describe the tower for prayer call, on the basis that it has a symbolic interpretation, a derivation of divine light, or an image of spiritual illumination. While the second origin of the word *Manara* indicates being a marker or signpost of the principal Islamic building (Hillenbrand, 1944). It could also be interpreted symbolically as promotion and triumph, to 'raise the *Manar* of Islam', to promote Islam or to achieve it's triumph (Abouseif, 1985). However, it should be noted that the word *Manara* is the source of the English word minaret, which was translated to English from its Turkish form (Prochazka, 1986).

Obviously, both the *Sawma'a* and the *Manara* are not relevant to the ritual role of the minaret, unlike the third name, the *Ma'adhana*, which is derived from the word *Adhan,* indicating the place from which the prayer call is performed (Hillenbrand, 1944). All three words would all come to mean a tower attached to a mosque for the purpose of performing prayer call.

4.3.3.2 Symbolic Dimension of the Minaret

Although the minaret had lost its physical function and the *Muezzin* has been replaced by loud speakers, it still exists in all mosques. Because it has a symbolic significance,

and it is very hard to imagine a mosque without a minaret.

The first minarets of the Ummayyid Mosque in Damascus announced the victory of the new religion in the town, and there is no religious necessity to have four of them (Hillenbrand, 1985). This symbolic significance applies only to mosques which were constructed in places Islam first arrived. However, there are many other meanings that apply to all minarets. For example, it is thought that the height of the minaret and the upward pointing form reflect the Glory of Islam (Aba El-Khail, 1979). The second meaning is that being high and slim resembles the number '1', emphasising the Oneness of God. It is also thought that the verticality of the minaret is similar to the vertical strokes of Arabic script, being similar to the first letter of the script, '*alif*'. Then, in the macro scale, '*alif*' becomes synonymous with the Creator (Allah) and in the micro scale, with His creation, man (*Insan*) (Ardalan & Bakhtiar, 1973). Another meaning could be inspired from the analogy of the minaret as a finger pointing upwards to Heaven, and reminds people by the eternal relationship between Earth and Heaven (Ibrahim & Mostafa, 1992). Finally, it could be seen as a link between Heaven and Earth.

4.3.3.3 Formation of the Minaret

The minaret is generally divided into the shaft and the top, the shaft or the body is divided into parts, the number and the form of parts depend on the place and the period within which the minaret was built **(Figure 4-11)**. Generally, some Cairene minarets had square and octagonal stories; the area between them was called the transitional zone and was treated in two ways. The first treatment was found in the minaret of Bashtak of the Baharite Mamluk period, where the octagonal story was supported on a square base, with its upper corners cut off, to form triangles pointing downwards, leaving four trapezoids, each at one side, just below the octagonal part. These triangles were carved with waving motif. The second method involved using pyramids at the corners replacing the triangles, as in one of the minarets of the Mosque of Shaikhu, of the Baharite Mamluk period, at Saliba street. However, the other minaret, which belonged to the *Khanqah* of the same complex was given downward pointing triangles (Abouseif, 1985)

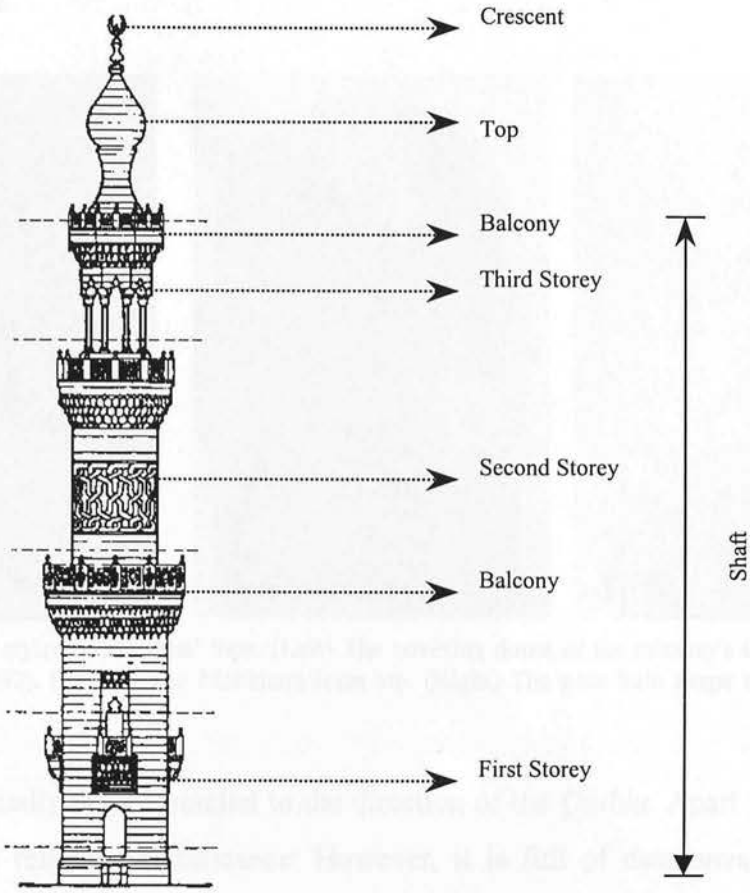


Figure (4-11) Different parts of the minaret. Source the researcher based on (Ibrahim & Mostafa, 1992).

The second major part is the top. This started with a covering dome as in the minaret of Al- Geyuoshi of the Fatimid period. Afterwards it evolved to the form of the *Mabkhara* and finally the pear bulb shaped top or the *Qulla.* In fact, the word *Mabkhara* in Arabic means, 'incense burner'. It was associated with the minaret, because the Caliph Al-Hakim Bi- Amr Allah used to burn incense in his minaret to perfume the mosque. In regard to its form the *Mabkhara* is a polygonal ribbed helmet supported on an open octagonal or circular structure, as in the minarets of Al-Hakim. Whereas the *Qulla,* that was used in the later Mamluk period, was shaped like a pear. It derived its name (*Qulla*) from the upper half of the typical Egyptian water container having the same shape **(Figure 4-12)** (Hillenbrand, 1944).

The top of the minaret (as well as the dome) was crowned by brass finials, which, mostly contained two brass spheres above each other, topped with a crescent, or a boat shaped finial that was sometimes supplied with seeds for feeding the birds, as in the

minaret of Ibn Tulun.

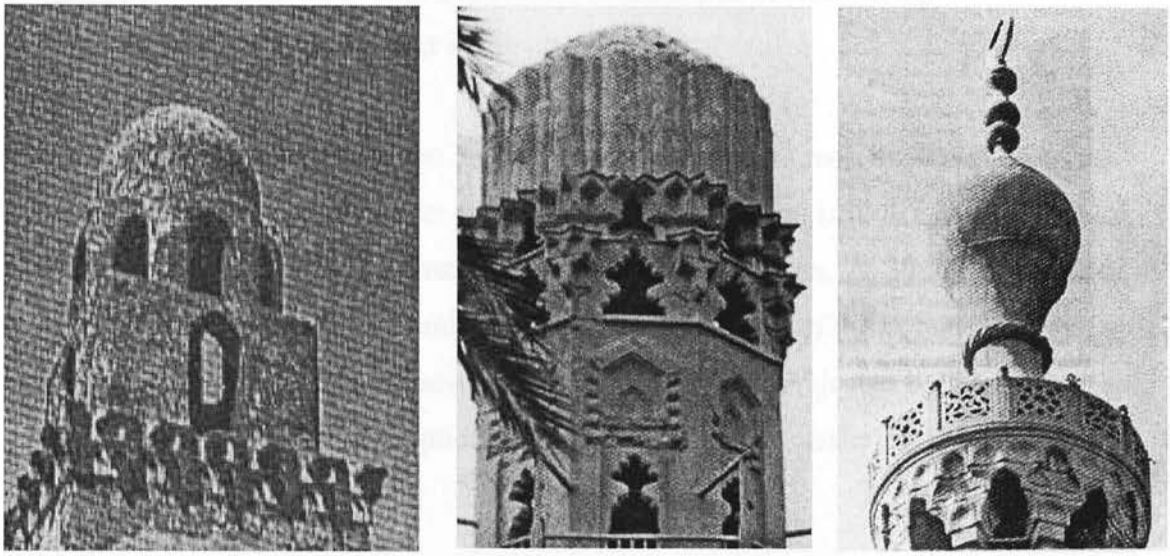


Figure (4-12) Different styles of minarets' tops. (Left) The covering dome of the minaret's top. Source (Ibrahim & Mostafa, 1992). (Centre) The Mabkhara form top. (Right) The pear bulb shape top. Source (Abouseif, 1985).

The crescent was usually placed parallel to the direction of the *Quibla*. Apart from this the crescent has no religious significance. However, it is full of deep meaning, for example it is related to the lunar calendar system, upon which Islamic chronology is based. The lunar calendar determines the start and end of each month, and the beginning for some rituals like fasting & pilgrimage. This was mentioned in Al-Baqarah Sura:

"They ask you (O' Mohamed) about the new moons. Say: These are signs to mark fixed periods of time for mankind and for the pilgrimage... ".

(The Holy Quran, 2:189)

It also emphasises the meaning of reaching heaven in the sky, where the crescent used to be (Al-Mi'mar, 1989). Finally, the appearance of the crescent at the beginning of the lunar month, lights up the earth dispersing darkness, just as the appearance of Islam dispersed *'Gahillia'* (the pre-Islamic state of paganism) (Ibrahim & Mostafa, 1992).

Not all the minarets of Cairo had inscriptions, but most of the Mamluk minarets did, mostly based on Quranic texts. Being somewhat high, these inscriptions were not easy to be read. A point that led to a conflict as to whether they were carved for the sake of communication or decoration, to make distinction one should differentiate between the

earlier and the later Mamluk periods. Unlike all previous periods, the Circassian (Burgi) Mamluk period was mainly concerned with outlook and decorative aspects (Abouseif, 1985). This will be discussed later in the next chapter.

Illegible inscriptions might not be carved only for decorative reasons, but it could also have had a ceremonial value or act as a ritual sign. The minaret is most often the highest point in the city receiving the first and the last rays of the sun. As Prophet Mohamed (pbuh) said, several times in a number of occasions, the doors of the sky are open during prayer call, and worshippers requests or demands will not be rejected by God. Thus the minaret with it's Quranic inscriptions, acts as a permanent carrier of prayers towards heaven (Abouseif, 1985).

4.3.4 The Dome

A dome is a kind of roofing that increases the area it covers, and has many advantages in comparison with a common flat roof.

4.3.4.1 Origin of the Dome

The dome is found in traditional architecture all over the world. Domes were not only constructed as decorative or characteristic elements but also have symbolic, ritual and spiritual meanings, as well as fulfilling the environmental and structural needs. The Romans constructed the first dome in the great building of the Panthenon, with the dome as its focal point. Then the Byzantines used it in Churches and monasteries. Subsequently, it was transferred to Islamic architecture (Hillenbrand, 1985).

Climatically, the dome fulfils two tasks; thermal comfort and better ventilation in hot climates. If assuming a constant volume, the height of a domed room is higher than the traditional flat covered room, which improves thermal comfort, by increasing air movement and cross ventilation. Skylight openings provide better ventilation through increasing the stack effect. Dome Skylights also provide about four times more light per unit area than low windows in vertical walls, and produce a more homogeneous distribution of light (Minke, 1993).

Structurally, the dome expands the span covered without use of additional columns or pillars in the middle. Constructing domes in mosques freed the central prayer hall from columns, so that people could see the *Imam* clearly and interact with his oration. It also allows the formation of uninterrupted worshipper rows throughout the width of the prayer hall, as is preferred for religious reasons. At last, when located over the *Mihrab* the dome acted to emphasise it's significance (Waziri, 1986).

The dome had several different applications in Islamic architecture. During the Fatimid era it was mainly used in mosques, mausoleums, palaces (in Syria and Iraq), city gates and entrances (i.e. Bab Zuwayla). It was also used in defence buildings and towers (the tower of Al-Zafar[3]) and eventually in public buildings that were occupied by a large number of people, and needed sufficient air flow, as in: Bazaars, Bathes *(Hammams)* and Memorials.

As for the number, the dome was sometimes found in isolation, as two coherent domes, a single dome supported on four half domes; having a fifth half dome over the *mihrab*, four other small domes in the corners of the mosque; or shaped as a group to cover the *riwaqs* of the mosque (Hillenbrand, 1985). There was no single specific location used for the dome throughout different historical eras, but rather it was placed in different areas according to the purpose of use.

4.3.4.2 Symbolic Dimension of the Dome

Spiritually, the dome symbolises the sky, being considered as a model for what is seen in the open wide horizon and spherical sky with no pillars. This was clearly stated in Al-Ra'd Sura

> *" Allah is He who raised the heavens without any pillars that you can see... "*
> (The Holy Quran, 13:2)

The dome (especially over mausoleums) could also be seen in cosmological perspective, as the transition from Earth (which is considered to be the square underneath the base of the dome) to Footstool and Throne (the octagonal zone), to the celestial dome, and

[3] The tower is connected to the North Eastern corner of Bab Al-Nasr, having the southern section

finally to God the One (Gabr, 1992). This analogy was inspired from the verse quoted in Al-Haqqah Sura

" ...and eight angels will, that Day, bear the Throne of your Lord above them"

(The Holy Quran, 69:17)

Obviously, the whole process verifies upward vertical movement. This was also emphasised by the carvings of the floral ornaments on it's external surface, reflecting that plants always grow upwards against Earth's gravity.

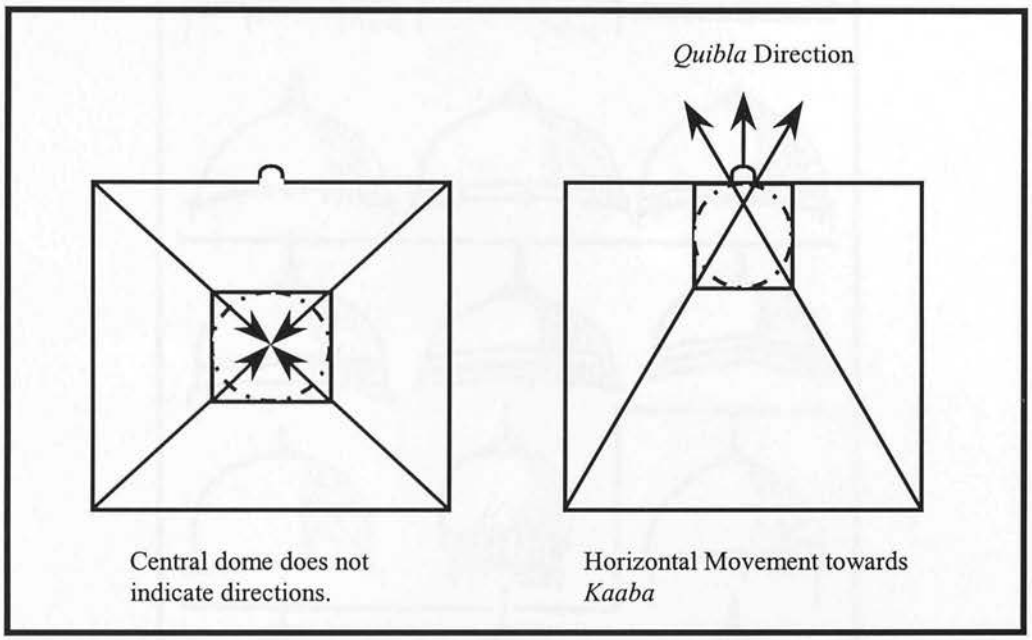


Figure (4-13) The Location of the dome indicates the static – dynamic state. Source (Waziri, 1986).

Moreover, when the dome is located over the *mihrab*, it has been interpreted to symbolise horizontal movement in the direction of Makkah **(Figure 4-13)**. Finally, and as stated earlier in the minaret, there was a crescent crowning the dome, with all its symbolic meanings (Waziri, 1986).

4.3.4.3 Formation of the Dome

Due to the different uses of domes a variation in forms has taken place. For example

extended to Bab Al-Wazir. It was restored by Salah Al-Din Al-Ayyubi (Ibrahim & Mostafa , 1992).

spherical domes as in Al-Azhar mosque, or ribbed domes as in the mausoleum of Sayeda Ruqayya of the Fatimid era in Cairo. Sometimes domes are elliptical (mostly in Algeria), or pyramidal (mostly in Spain), or even onion shaped (mostly in India) **(Figure 4-14)**.

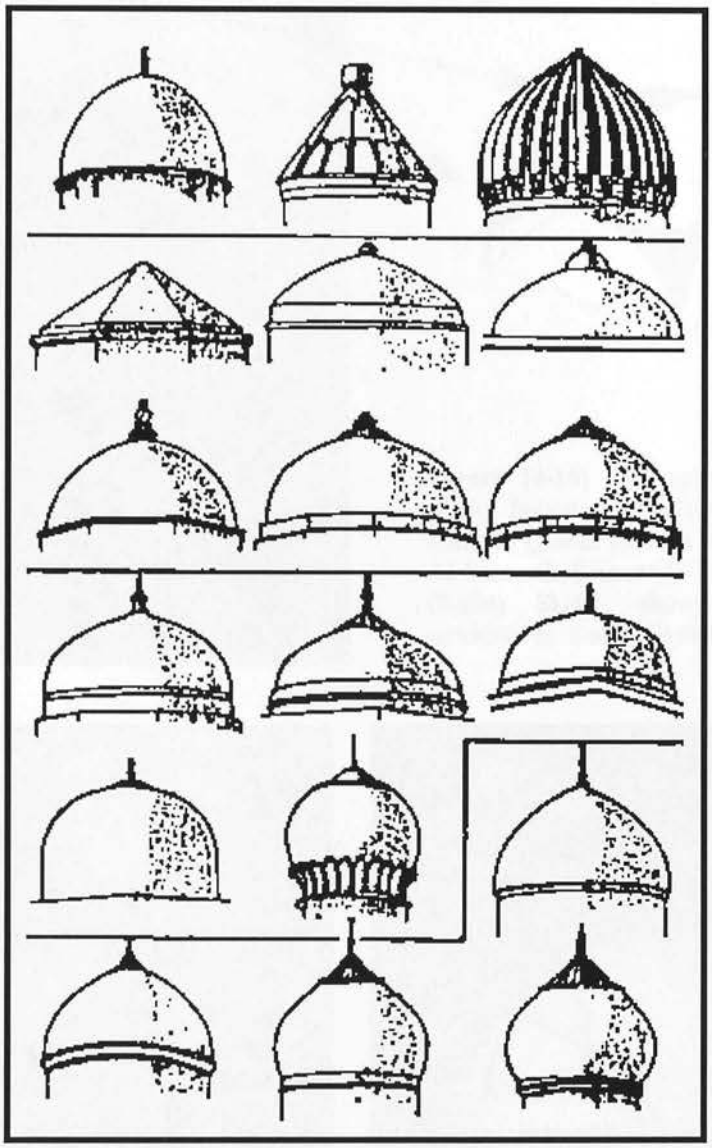


Figure (4-14) Domes in Eastern and Western Islamic World. Source (Kaki, 1988).

In general the dome consists of three main parts including: the transitional zone; the drum; and the top or the helmet, ordered from bottom to the top. Starting with the transitional zone, the main problem, which faced builders wishing to put a circular dome over a square plan, was how the two could be fitted together. Early attempts were made, producing an octagon of irregular shape by covering the angles of the square with slabs. Two courses of stones were laid on this octagon, the upper one, projecting slightly in

front of the one below. It was possible to use this structure as the base for a dome (Leacroft & Leacroft, 1976). However, this method was developed using two major methods, spherical pendentives **(Figure 4-15)**, and squinches and stalactites **(Figure 4-16)**. Later on other methods were developed (Ibrahim & Mostafa, 1992).

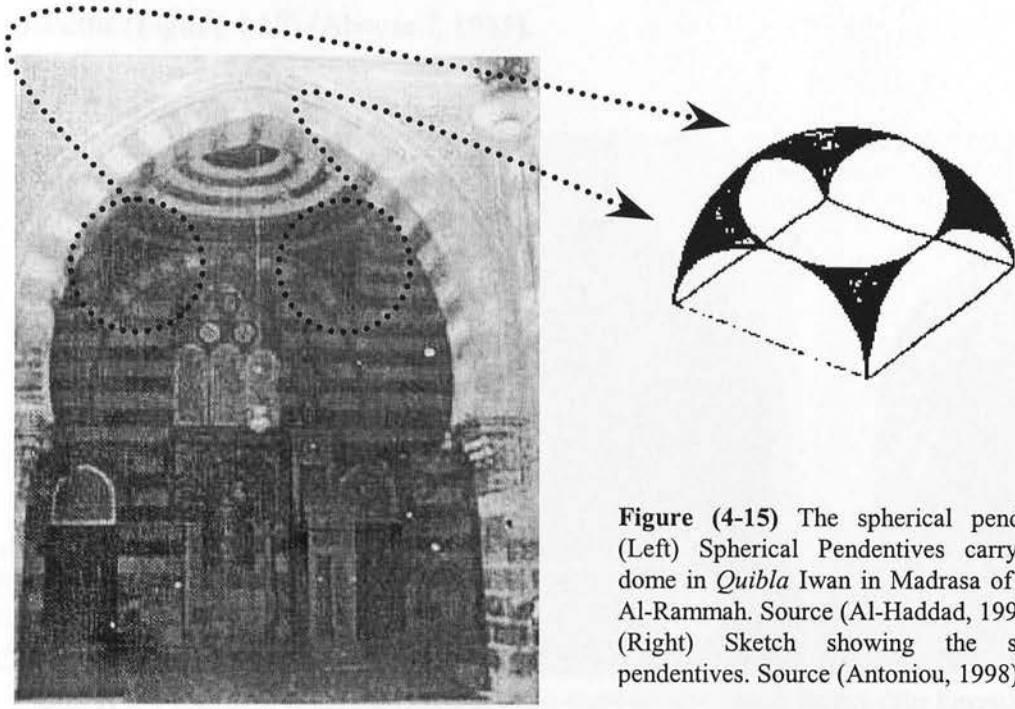


Figure (4-15) The spherical pendentives. (Left) Spherical Pendentives carrying the dome in *Quibla* Iwan in Madrasa of Qanbay Al-Rammah. Source (Al-Haddad, 1998). (Right) Sketch showing the spherical pendentives. Source (Antoniou, 1998)

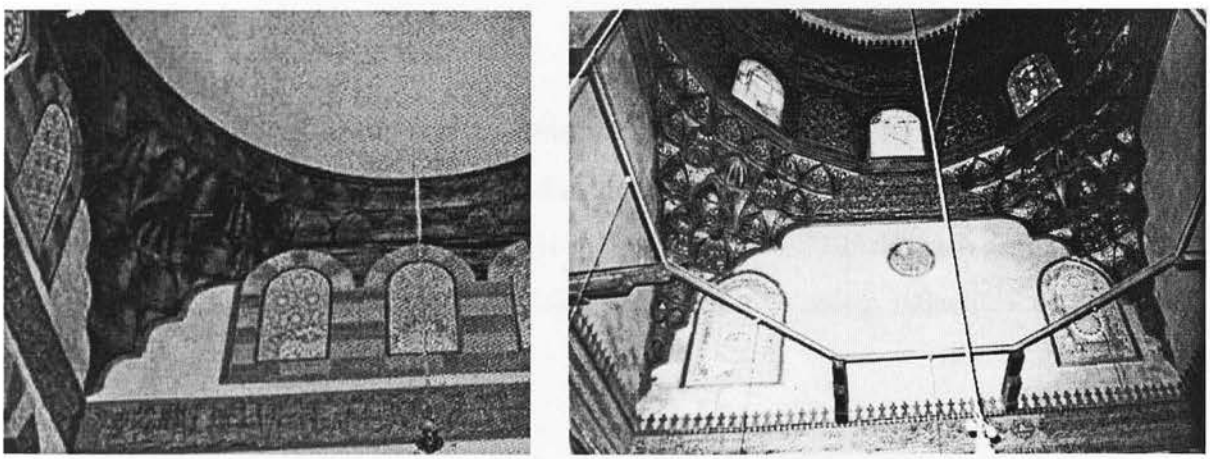


Figure (4-16) Using stalactites in the transitional zone. (Left) Stalactites underneath the dome of Al-Naser Mohamed Mosque. (Right) Stalactites underneath the dome Al-Naser Farag Ibn Barquq Mausoleum. Source (Ibrahim & Mostafa, 1992).

The second part is the drum, which consists, in most cases, of a circular neck over the transitional zone. It contains a number of arched openings that differ from dome to dome. Within this context, it is worth saying that most of the Mamluk domes had an internal area over the drum that might be bare of any ornaments, or sometimes had some Quranic inscriptions. Eventually, the topping section, the helmet, that in most cases, had the form

of the pointed dome, or sometimes an onion shaped dome (Al-Haddad, 1998).

The Muslim architect took great care in ornamenting the dome. There were various patterns which included the ribbed dome, a zigzag pattern, geometric patterns, and floral patterns **(Figure 4-17)** (Abouseif, 1985).

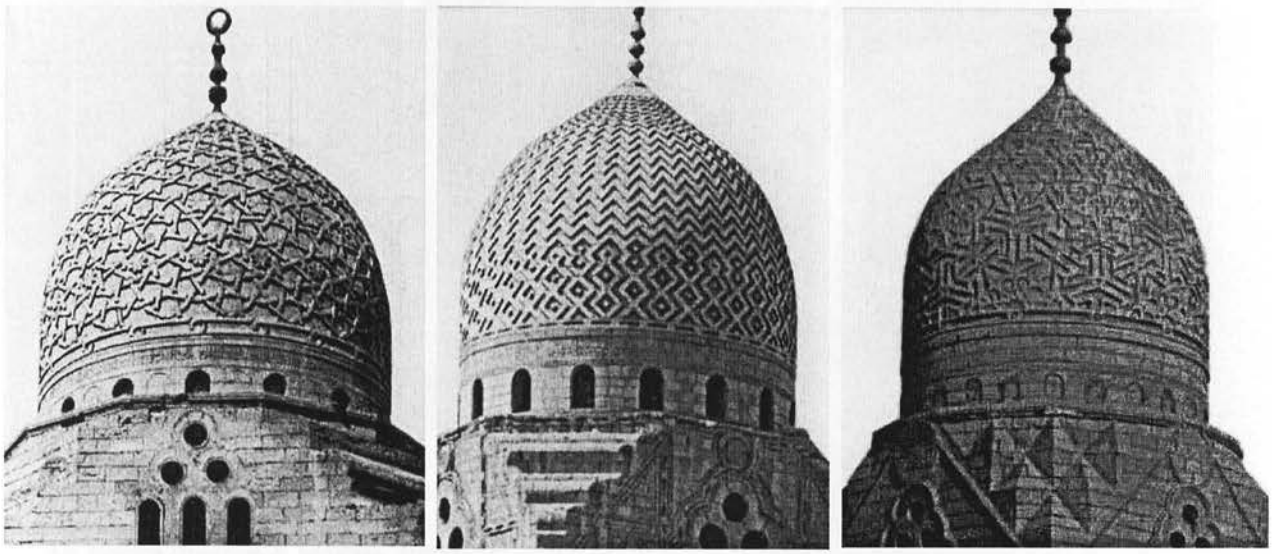


Figure (4-17) Examples of different patterns of the dome ornamentation. Source (The Egyptian Ministry of Waqfs, 1949).

4.3.5 Facades

In the next few pages a study of the elements of the façade will be presented. Facades were originally featureless high walls. Small openings were then added at high levels. Afterwards new tools were used to improve the outlook of the façade, such as the contrast between solid areas and voids, coloured stripped courses, cresting, stalactites, ornaments and portals.

4.3.5.1 Openings and Grills

Before the Fatimids, the façade was solid for two reasons. The first, related to climate is that the whole building opens to an interior courtyard. Because of this there was no need to have any openings in the façade. The second reason relates to the desire to maintain the privacy of the mosque. The Fatimids treated the mosque in the same way climatically, but added niches and openings in the façade to reduce monotony. In terms of privacy, grills were added to the openings to prevent outsiders being able to see inside. Different kinds of grills were used to cover these openings. For example stained glass grilles, wooden

grilles, turned pine wood screens, wooden *Mashrabeyya* (screens), Bronze grilles and stone screens **(Figure 4-18)** (Ibrahim & Mostafa, 1992).

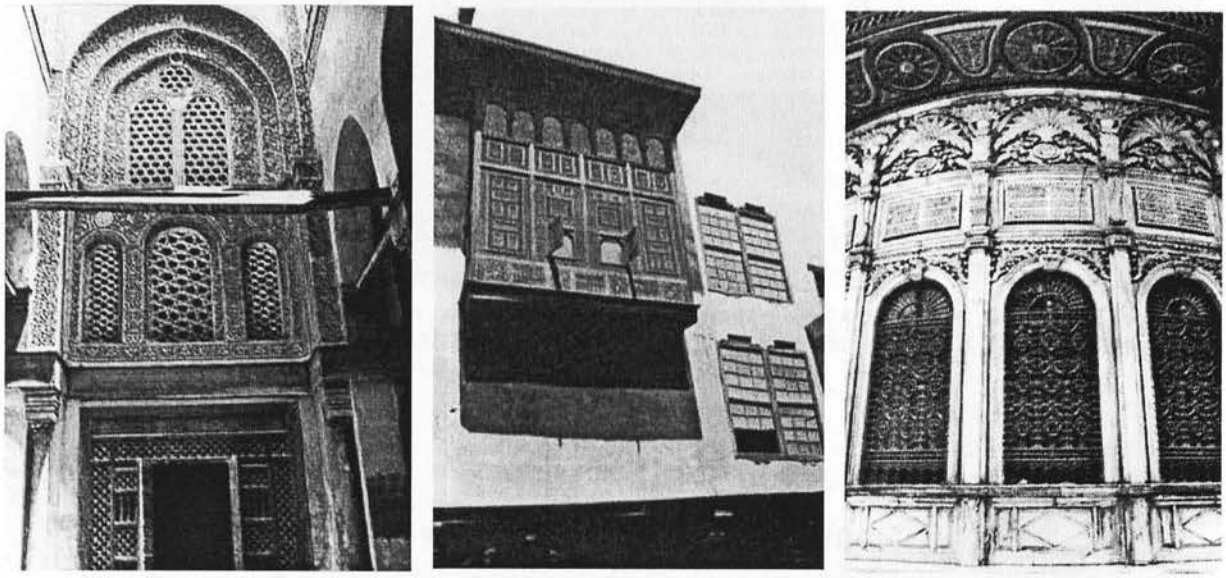


Figure (4-18) Different views of the grills used to cover openings (Left) The entrance façade of the mausoleum facing the Sahn at Qala'un complex, showing the grills covering the openings. (Centre) The Musafirkhana wooden *Mashrabeyya* (screens). (Right) The Bronze grilles in the drink-room of Mohamed Ali. Source (Ibrahim & Mostafa, 1992).

4.3.5.2 Portals

Portals were considered to be extremely important by Muslim architects, mainly because they dominated the formation of the entire façade. The location of portals was also critical in terms of determining movement paths of the building's users. In general, portals started as simple openings in the wall then were developed to be deep rectangular openings; the height was almost the full height of the building, topped with an arch. Sometimes this opening was included in a frame, having a column at each side crowned with an ornamented balcony (Abdel Gawad, 1970).

Symbolically, the portal was an approach to the mosque, moving from the outside to the inside; from the unclean to the clean; from the earthly world (the street and its crowdness) to the heavenly world (the mosque's peaceful atmosphere). It represents movement towards deep meaning and eminence bringing different levels of spirituality to the mind and leaving all earthly interests behind.

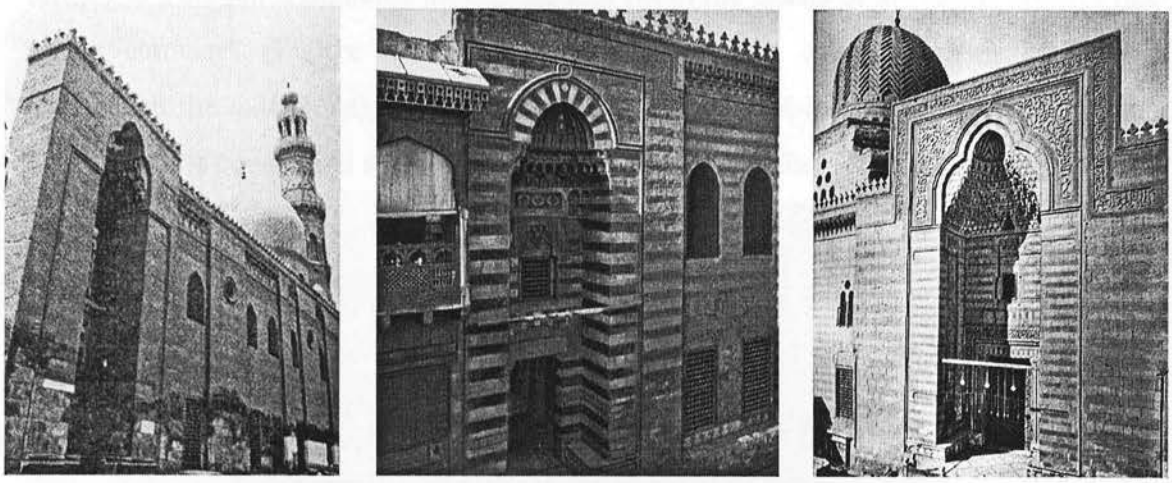


Figure (4-19) Portals. (Left) The portal of the Al-Zahhir Barquq Madrasa. Source (Ibrahim & Mostafa, 1992). (Centre) The portal of the Al-Ashraf Bresbay Madrasa. (Right) The portal of Al-Mu'ayyad Mosque. Source (The Egyptian Ministry of Waqfs, 1949).

4.3.5.3 Stalactites

There are different types of stalactites, named due to the origin of their shape. The form originally came from the stalactites shaped by water dripping inside caves, giving very rich shapes (Al-Sheshtawi, 1979).

Providing a good contrast between shade and light, stalactites started in Iran then moved to Armenia. They were first used in Cairo in the minaret of the Fatimid mosque of Al-Geyuoshi Mosque at the cornice of the lower section. Bearing in mind that this mosque was established by the Armenian minister Badr Al-Gamaly, it was concluded that stalactites were transferred to Egypt from Armenia during the Fatimid period (Ibrahim & Mostafa, 1992). Though, there is another theory that their use came to Egypt from Syria, since Badr Al-Gamaly had been twice governor of Damascus. However, reference to potential sources of Cairene stalactites in other regions, based on what is seen in Al-Geyuoshi's minaret or even the facade of Al-Aqmar (having the earliest stalactites in Cairo), does not imply that these were the first to be used in Egypt. All in all, the stalactite became an essential element in the architectural vocabulary of Islamic Egypt (Bloom, 1988).

Stalactites were used as both a decorative and structural element. Structurally, it was used in three ways: as capitals for columns, in transforming a square plan into a circular base for a dome, and finally in supporting the balcony of some minarets. Its use was not

limited to a certain area, being used in facades (as in the facade of al-Aqmar Mosque next to its entrance) **(Figure 4-20)**, minarets (the minaret of Al-Saleh Nagm Al-Din underneath the *mabkhara*), domes, portals etc. It was used in mosques as well as other buildings. It is considered as an important contribution to Islamic architecture.

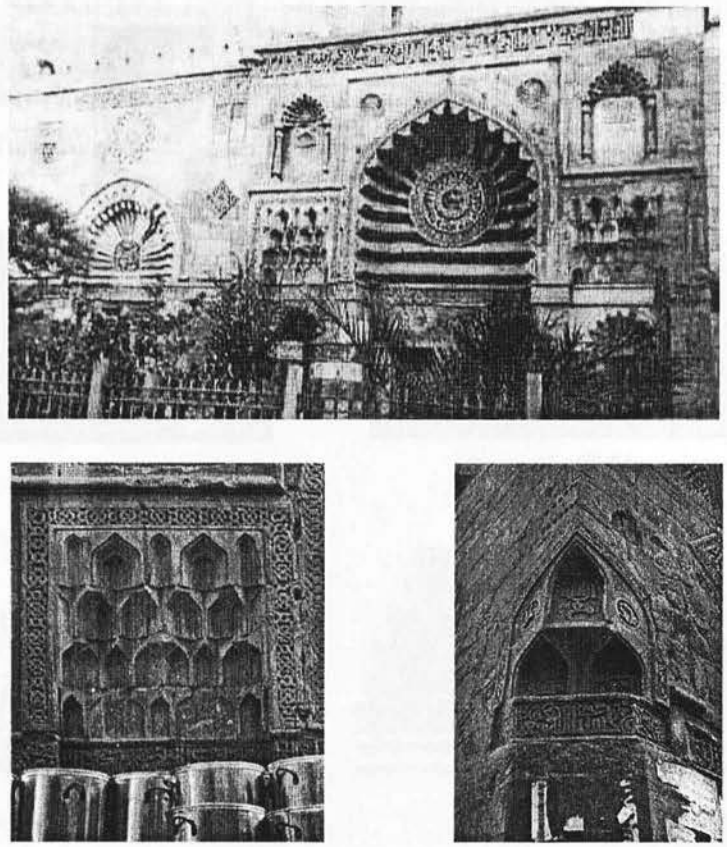


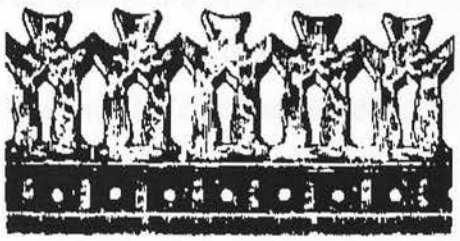
Figure (4-20) Details in the façade of Al-Aqmar Mosque showing the use of stalactites. (Above) The facade. Source (Ibrahim, 2000). (Below Left) Niche hood. (Below Right) Corner chamfer. Source (Bloom, 1988).

4.3.5.4 Cresting

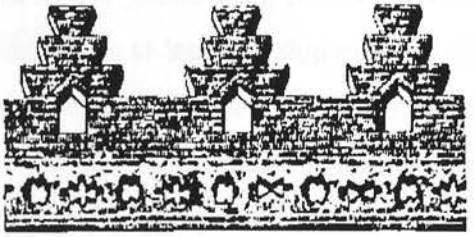
Cresting was used in the crowning facades before Islam by Assyrians, Iranians and Romans. It was found in Egypt, over a cornice, having the cresting surface projected off the facade; with a section being wider at the base than the top to give stability (Al-Maw'el, 1994c).

Generally, it is thought that **cresting emphasised upward movement**, since it was used to crown the façade. Using a floral pattern, which indicates the floral growth upward against gravity, or a stepped geometrical pattern so that the whole motif appears to point upwards. The silhouette of a figure raising his hands for prayer is also used. In addition, the use of a (solid / void) or (positive / negative) composition creates a unification with

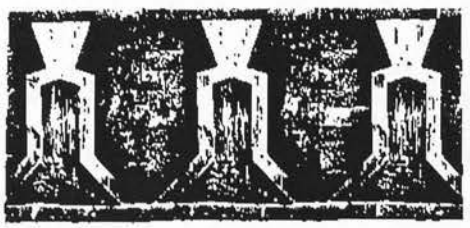
the skyline, strengthening the bond with the sky.



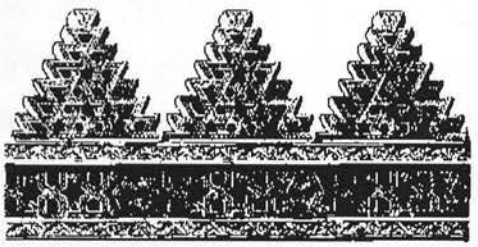
Ibn Tulun Mosque



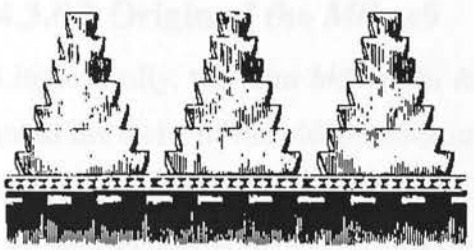
Al-Hakim Mosque



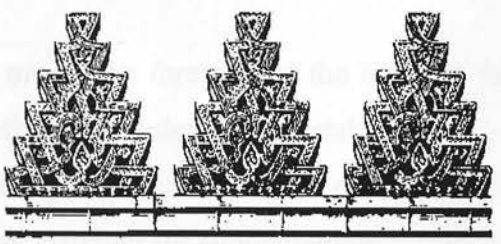
Ga'fari & Atika Mausoleum



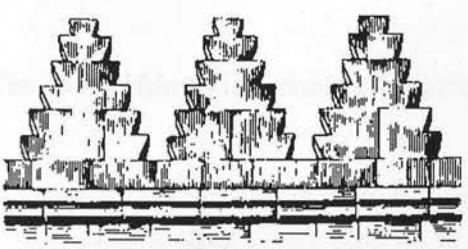
Imam Shafi'i Mausoleum



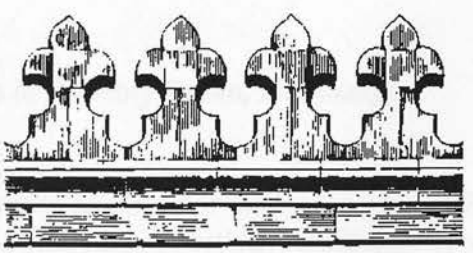
Al-Saleh Nagm Al-Din Mausoleum



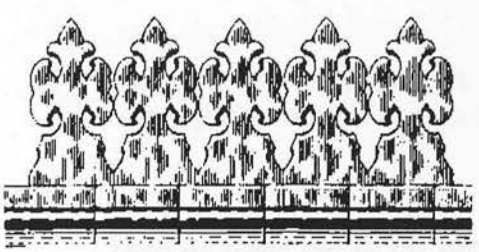
Sultan Qala'un Mosque



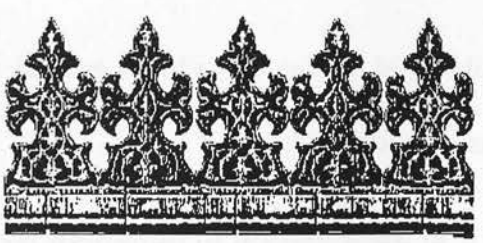
Baybars Al-Gashenkir Khanqah



Sultan Hasan Mosque



Qanybay Amir Akhur Mosque



Al-Ghuri Mausoleum

Figure (4-21) Types of cresting in different mosques. Source (The Egyptian Ministry of Waqfs, 1949).

4.3.6 The *Mihrab*

The *Mihrab* is a deep recessed arcuated niche in the *Quibla* wall. It is constructed for two reasons. The first is to identify the place of the *Imam* to lead worshipers. The second is to show the *Quibla* direction (direction towards the Holy *Kaaba* in Makkah) that Muslims all around the world have to orient themselves to, during prayers (Hillenbrand, 1985). However, Abo Samra (1974), argues that it is just a symbol to indicate the *Quibla* direction, and is of no functional use because the entire wall faces the *Kaaba,* indicating that direction.

Usually there is only one *Mihrab* in a mosque, but sometimes several *Mihrabs* can be found, as in the Mosque of Ibn Tulun, which had two other *Mihrabs* to commemorate their builders Caliph Al-Montaser and Sultan Lajin (Kuban, 1974).

4.3.6.1 Origin of the *Mihrab*

Linguistically, the term *Mihrab* in Arabic means the fore part of the house. It brings to mind the niche of the old Greco-Roman religious temples, having statues within, as well as the apse of the Christian Church. It is thought that the term was originally 'mekurab' and was transferred from Ethiopia to Yemen, standing for church temple, or niche, then it became 'mikrab' (Ibrahim & Mostafa, 1992).

The word *Mihrab* is mentioned several times in the Holy Quran, for example

> *"... He made her grow in a good manner and put her under the care of Zakariya (Zachariya). Every time he entered Al-Mihrab to (visit) her, he found her supplied her with sustenance...".*
>
> (The Holy Quran, 3:37)

> *"Then the angels called him, while he was standing in prayer in Al-Mihrab (a praying place or a private room...".*
>
> (The Holy Quran, 3:39)

> *"Then he came out to his people from Al-Mihrab (a praying place or a private room) and he told them by signs to glorify Allah's Praises in the morning and in the afternoon".*
>
> (The Holy Quran, 19:11)

The term *Mihrab* indicates the home in the first verse and the praying area in the second

and the third. Generally, Prophet Mohamed (pbuh) used two spears (one was short) to find out the *Quibla* direction, especially in open spaces (Ibrahim & Mostafa, 1992).

4.3.6.2 Symbolic Dimension of the *Mihrab*

The symbolic dimension of the *Mihrab* has different levels: first it commemorates the customary place that Prophet Mohamed (pbuh) used to pray in *Al-Masjid Al-Haram* in Makkah and in *Al-Masjid Al-Nabawi* in Al-Madina. That is why these places were held in great respect (Kuban, 1974). The second level is that the *Mihrab*, in all mosques, is oriented towards *Kaaba*, which implies unity between all Muslims across the world at the time of prayer. Finally, the *Mihrab* specifies a spiritual direction, an aspiration towards divinity, symbolising a door opening onto the divine world. It sends a vision to the other world, that of the infinite, evoking an image of passage not towards the Prophet (pbuh) but towards God (Khiati, 1986).

4.3.6.3 Formation of the *Mihrab*

The plan of the *Mihrab* is rectangular, polygonal or semi-circular, and of a few meters in width, sometimes covered by a dome (Kuban, 1974). Al-Sheshtawi (1979), classified the *Mihrabs* into four types: first is the **Flat *Mihrab***, which was adopted by Damascus, Egypt and the Western Islamic World, like one of the *Mihrabs* of Ibn Tulun Mosque in Cairo. The ornaments were mostly floral **(Figure 4-22)**. Secondly, the **Semi-Circular *Mihrab*** as the second one of Ibn Tulun Mosque. It has a concave wall and a vaulted elevation. The hollow surface is covered by stucco ornaments, mosaic and marble ribbons **(Figure 4-22)**. Third type is the **Straight Angled *Mihrab***, mainly used in Iraq and Persia during the early Abbasid era. It consists of a straight ribbed plan, so that the hollow niche has straight angles. Finally, the **Multi-ribbed *Mihrab*** as in Natanaza Khanqah in Iran, constructed in the Fourteenth century. The plan of this *Mihrab* consists of a five-sided polygon joining together in a star shaped arch.

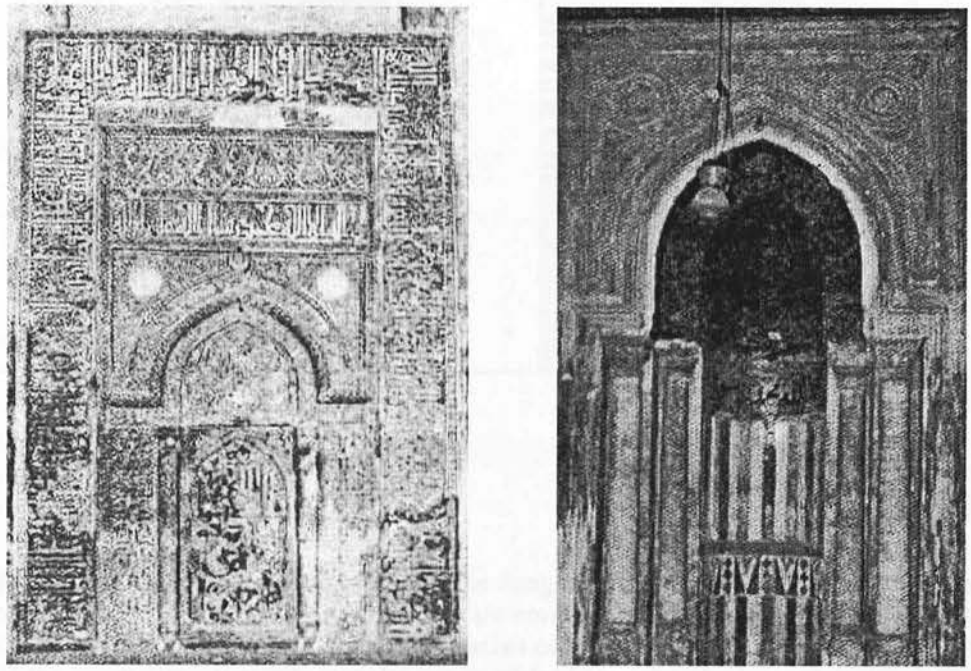
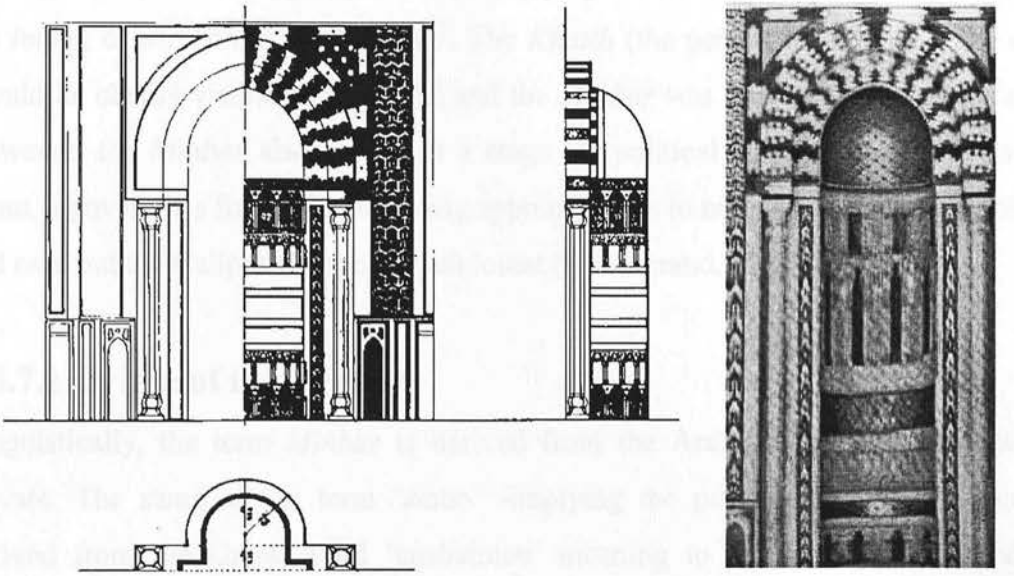


Figure (4-22) The *Mihrabs* of Ibn Tulun Mosque. (Left) The Flat *Mihrab*. (Right) The Semi-Circular *Mihrab*. Source (Ibrahim & Mostafa, 1992).

With regard to the use of materials, a large variety was used to decorate the *Mihrabs* and the *Quibla* wall around them. For example, wooden *Mihrabs,* as with Al-Sayyida Ruqqaiya Mosque in Cairo, elaborate the Fatimid skill of wooden sculpture. Another example is the *Mihrabs* covered with Marble, such as the *Mihrab* in the Mosque of Mohamed Ibn Qala'un from the Mamluk era, which was covered with coloured marble **(Figure 4-23)**. Stucco units were also used in the *Mihrab* of the *Madrasa* of Ibn Youssef in Morocco. Eventually, Ceramic Mosaics were used to cover *Mihrabs*, like the one in the mosque of Keiramanne in Iran (1349 AD), which was designed in a way that implies a great balance preventing the eye from concentrating on one particular point. Generally, most *Mihrabs* had calligraphic *Naskh* and *Kufic* Quranic texts (Al-Sheshtawi, 1979).



The *Mihrab* of Mohamed Ibn Qala'un Mosque The designer divided the wall of the *Mihrab* into four unequal divisions, separated by a strip of ornaments, all are covered with coloured marble. The first plane near the ground is ornamented with small colonnades and arches carved in the marble. The second plane, which is in the level of the Imam view, is simple in order not to mislead his concentration and devotion. The third one is almost the same as the first one but larger. The fourth area represents an open work in a half vault, using the same motifs as those in the strips separating the four areas.

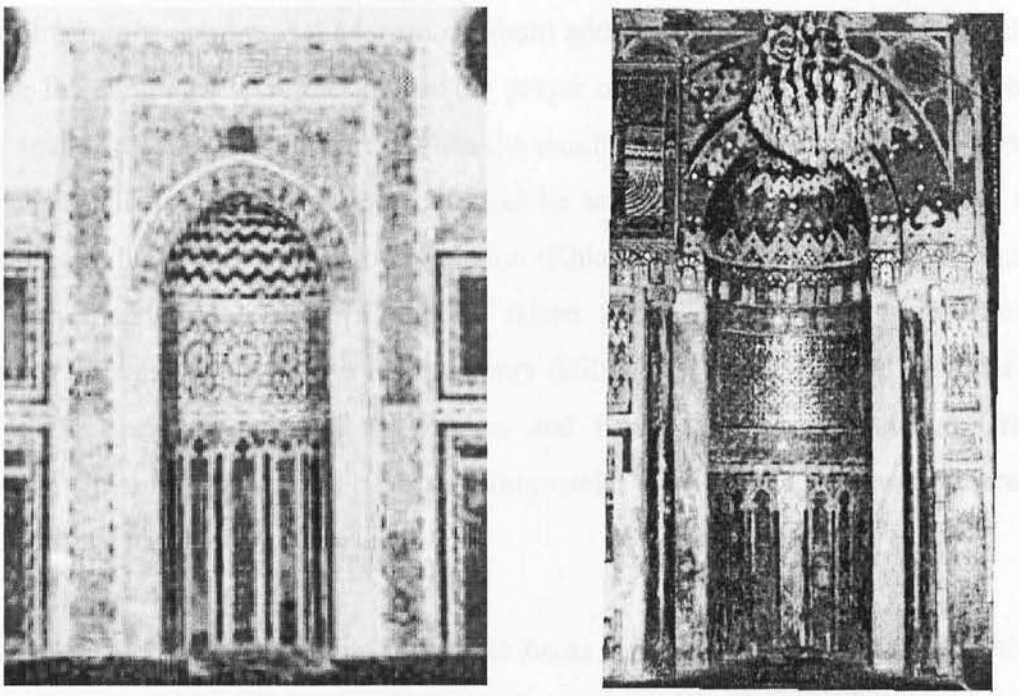


Figure (4-23) The use of marble and mosaic marble tiles, being arranged in geometric and floral patterns in *Mihrabs* during the Mamluk and the Ottoman periods. (Above) The *Mihrab* of Mohamed Ibn Qala'un Mosque. (Lower Left) The *Mihrab* of Sulaiman Pasha Mosque. (Lower Right) The *Mihrab* of Al-Burdaini Mosque. Source (Ibrahim & Mostafa, 1992).

4.3.7 The *Minbar*

One of the important integral parts of Friday prayers is *Al-Khutba* (oration), delivered by the *Imam*, or sometimes by the ruler[4]. The *Khatib* (the person who delivers the speech) should be clearly visible and audible, and the *Minbar* was created to fulfil this function. However, the *Minbar* also served as a stage for political announcements. In medieval Islam, a governor's first task after being appointed was to mount the *Minbar*, glorify God, and read out the Caliphs letter of appointment (Hillenbrand, 1985).

4.3.7.1 Origin of the *Minbar*

Linguistically, the term *Minbar* is derived from the Arabic word *nabara* meaning to elevate. The same as the term 'ambo' -implying the pulpit in churches- which was derived from the Greek word 'anabainien' meaning to raise or elevate (Ibrahim & Mostafa, 1992).

The *Minbar* is similar to the pulpit in the Church; it is a primitive stepped right-angled triangle that is set against the wall. However, there are different theories about the origin of the *Minbar*, the first one states that the *Minbar* is simply a monumental version of the raised chair from which Prophet Mohamed (pbuh) addressed his followers. As he used to preach to the congregation, either before the prayer or after it. Initially, he spoke while leaning against a column. Afterwards, when the number of Muslims increased, he used a simple chair called a *Minbar* so that he could be seen by all in attendance. Next, the Minbar became the pulpit of the Friday oration (Khiati, 1986). The second theory states that it was transferred to Islam from the raised throne upon which the Sassanian commander in chief reviewed the Persian army (Hillenbrand, 1985). Third, it could be traced to the speech pulpits of the Agoras and Parliaments in Roman and Greek architecture (Ibrahim & Mostafa, 1992). Unfortunately, there is no surviving evidence to prove or dispute any of these theories.

The *Minbar* is a raised platform, on which the *Imam* stands while delivering the oration. This has a number of symbolic implications, for example the high platform symbolises the high place and rank of the scholars and Imams, where they should always be, representing the sacredness of knowledge in Islam (Dawood, 2000).

[4] The *Minbar* was sometimes used by the ruler to discuss some political issues with the people. Then, it

In general, there are no distinct rules regarding the number or the location of the *Minbar* in a mosque. Though most of the contemporary mosques have only one *Minbar*. The location was generally near the middle of the *Quibla* wall as the Prophet's chair. Yet, Ummayyids used *Minbars* with wheels and transported it, and best example of the transportable *Minbars* is the one in the Great Mosque of Cordoba (Kuban, 1974).

4.3.7.2 Formation of the *Minbar*

With regard to the number of steps, it is thought that the *Minbar* of the Prophet (pbuh) had two steps with the third step was for sitting (Kuban, 1974). When Abu Bakr became a Caliph (after the lifetime of Prophet Mohamed - pbuh) he made his loyalty vow on the *Minbar* of the Prophet. Then he used to stand on the second step of the *Minbar* throughout his *Khutba*, while Omar Ibn Al-Khattab the second Caliph stood on the third (lower) step. Finally, the third Caliph Othman Ibn Affan went back to the second step (the position of Abu Bakr), and this practice was adopted by subsequent Caliphs. Next, Marwan Ibn Al-Hakam of the Ummayyids added six more steps below the original three, so that when one reaches the seventh step, it matches the first step of the Prophet's *Minbar* (Al-Sheshtawi, 1979).

There were some modifications added to the *Minbar* through the centuries, as in the addition of the canopy capping the upper platform, which used to have a conical or domical roof. This was an Indian influence, implemented by the Turks. The *Minbar* roof was linked to the architectural style of the mosque, to maintain the harmony of the place (Kuban, 1974). A gate was added to give access to the steps and another two small gates added to the *Minbar* on each side of it, underneath the seat of the *Khatib* (Al-Sheshtawi, 1979).

Wooden *Minbars*, which are the most common, exhibited the talent of architecture and sculpture in the Islamic World, as the side panels of the stairway and the platform were decorated with geometrical and traditional arabesque panels. These consisted of small geometrical modular units that when fitted together created the overall pattern, as found in Al-Saleh Tal'i Mosque. The Mamluks also, took great care in building these *Minbars*,

became a symbol of authority and the rulers received the loyalty of their people while seated on.

precisely choosing the type of wood, nacre and ivory used. Examples of such *Minbars* are found at Barquq Madrasa and Al-Mu'ayyad Mosque of the Mamluks and Sinan Pasha Mosque of the Ottomans **(Figure 4-24)**. Another is the marble *Minbars*, as in the Mosque of Sulaiman in Istanbul (sixteenth century) (Ibrahim & Mostafa, 1992).

Generally, the *Minbar* was a common feature in all Egyptian mosques, with a few exceptions in which the Friday prayer was not held, like Al-Aqmar Mosque (Ibid.).

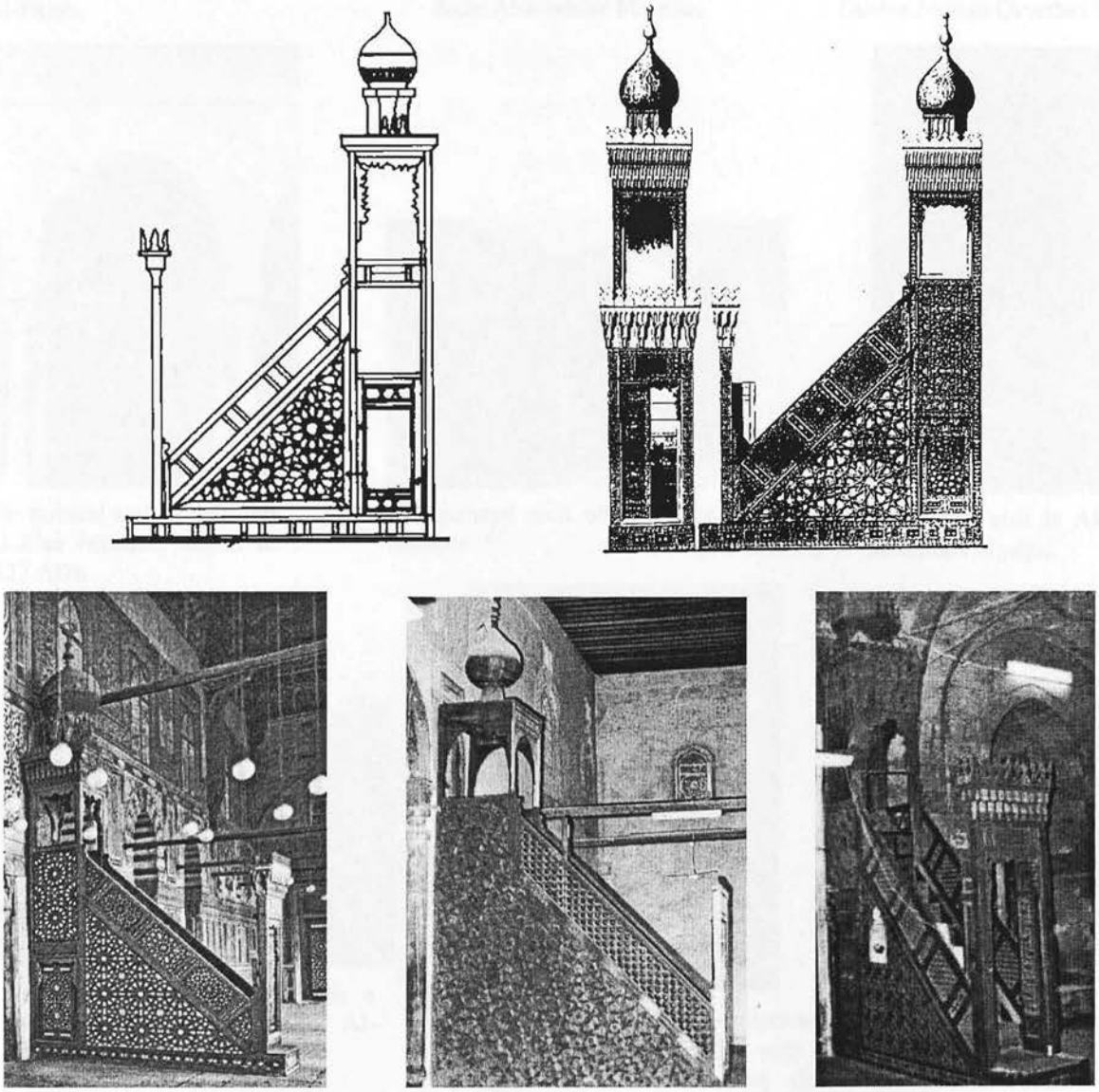
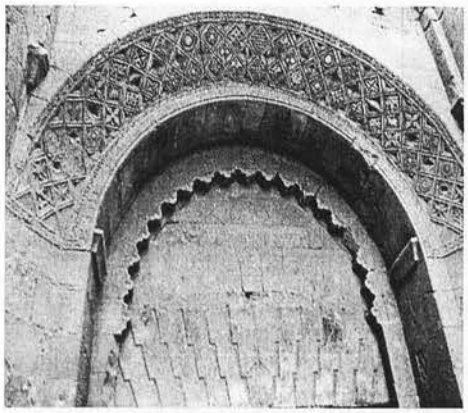
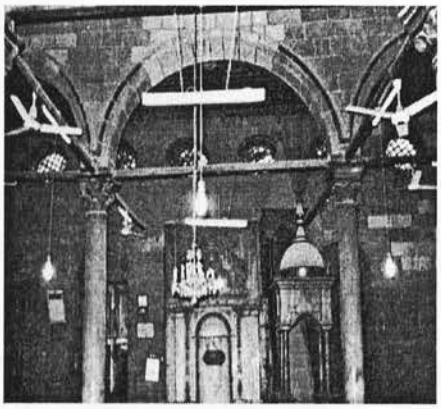


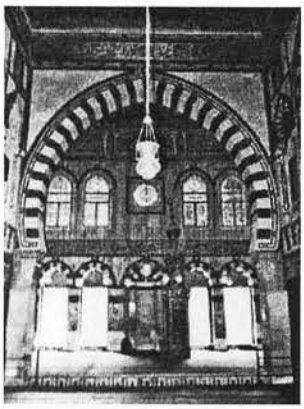
Figure (4-24) The wooden *Minbars*. (Upper Left) The *Minbar* of Barquq Madrasa. Source (Ibrahim & Mostafa, 1992). (Upper Right) The *Minbar* of Qayetbay Madrasa. Source (Waziri, 1999). (Lower Left) The *Minbar* of Al-Mu'ayyad Mosque. Source (The Egyptian Ministry of Waqfs, 1949). (Lower Centre) The *Minbar* of Al-Saleh Tal'i Mosque. Source (Ibrahim & Mostafa, 1992). (Lower Right) The *Minbar* of Sinan Pasha Mosque. Source (Ibrahim & Mostafa, 1992).



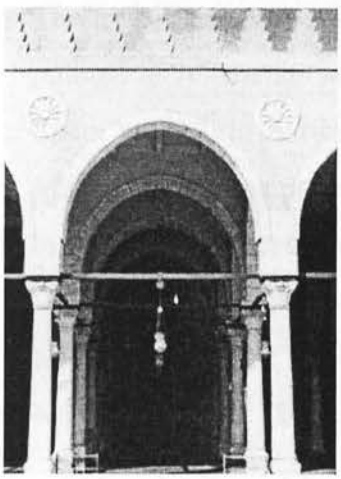
The round arch of the tower of Bab Al-Futuh.



The round arches in Sulaiman Agha Al-Silahdar Mosque.



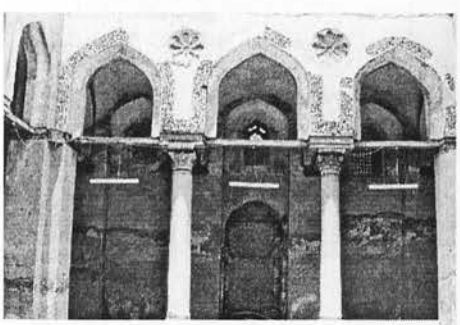
The horseshoe arch in the *Qubla Iwan* in Qayetbay Madrasa



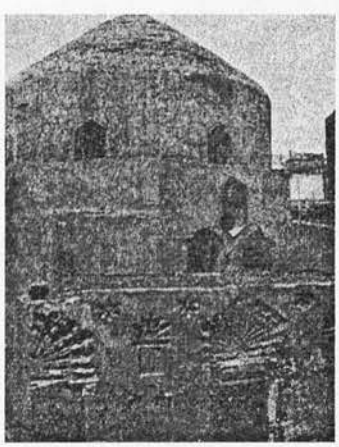
The pointed arch of Amr Ibn Al-A'as Mosque, added in (827 AD).

The pointed arch of Sulaiman Pasha Mosque.

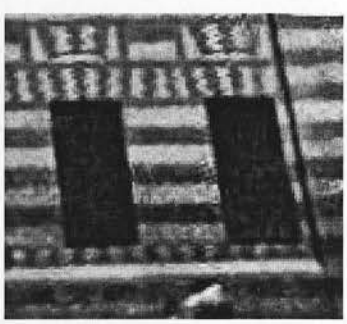
The trefoil arch in Al-Naser Mohamed Mosque.



The pointed arch ending with a straight line in the arcade of Al-Aqmar Mosque.



The triangular arch that was derived from the pointed arch ending with a straight line, after removing the inclined part at the foot of the arch; in the dome of Shagarat Al-Durr



The relieving arch above the windows of Qanbay Al-Rammah Madrasa.

Figure (4-25) Examples of different types of arches. Source (Ibrahim & Mostafa, 1992).

4.3.8 Arches and Vaults

There are many forms of arches which have been used throughout history. However, the discussion below will concentrate only on Cairene arches.

The round arch was used prior to Islam by the Romans, and was first used in Islamic architecture by the Ummayyids. The pointed arch was used also by the Ummayyids in their mosque in Damascus and was considered one of the earliest usages in mosques. The earliest use of a pointed arch, ending with straight lines, in Egypt was during the eleventh century at Badr Al-Gamaly Dome. Thus, the inclined part at the foot of the arch was, occasionally, cancelled, resulting the triangular arch, as in the dome of Shagarat Al-Durr. The trefoil arch was mainly used in portals and is assumed to be a development of the pointed arch. The horse shoe arch was known before Islam, and was frequently used in Spain and North Africa after Islam, as seen in the niches to the right and left of Al-Mahdiyya Mosque portal in Tunisia. The relieving arch is a segmental arch that was used to reduce the effect of the vertical forces on arches, and was first found by the Hawrans in Damascus during the first century. In Islamic periods, it was first applied in the eastern palace of Al-Hayr (728-729 AD). The use of such arches in Cairo is illustrated in **(Figure 4-25)** (Ibrahim & Mostafa, 1992).

The vault could be assumed as a continuous arch or a series of coherent arches supported on the side walls of the space needed to be covered. It has many forms, for example cross vaults, fan and cross vaults, intersected vaults, cloister vaults that were used in covering drinking rooms and niches containing lower windows in mosques; and pointed vaults as found in the covered *Iwans* in *Madrasas* during the Ayyubid, Baharite and Burgi Mamluk eras **(Figure 4-26)** (Ibrahim & Mostafa, 1992).

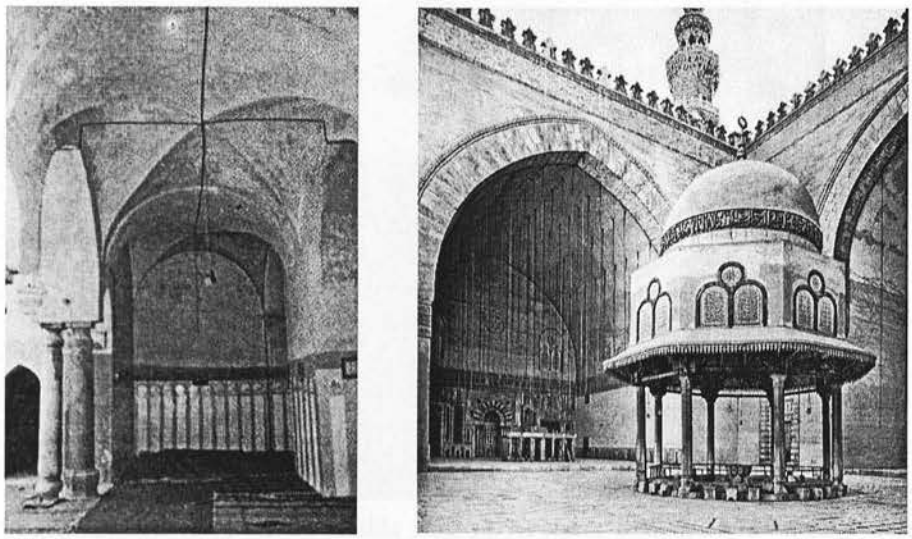


Figure (4-26) Different use of vaults. (Left) The cross vaults of Al-Geyuoshi Shrine. Source (Ibrahim & Mostafa, 1992). (Right) The pointed vaults of Sultan Hasan Madrasa. Source (The Egyptian Ministry of Waqfs, 1949).

4.3.9 The Decoration of the Mosque

Ornamentation has played a major role in interior and exterior decoration in mosque architecture. The most common among these were interlacing floral patterns, geometric patterns, and calligraphic inscriptions. These patterns were used to decorate minarets, minaret balconies, parapets, domes, arcades, window screens, door/window lintels, glass windows, lamps, *Mihrabs, Minbars, Dikkas* ... etc.

With regard to decorating with statues, Islam forbids their use because Islam came to the Arab peninsula at a time where the majority of the population were idol worshippers. As the new religions strictly prohibited the worshipping of idols the using of statues was forbidden under any circumstances. Similarly, it disapproved of paintings, especially human and animal paintings, to block any return to the worshipping of idols. Thus, with the total absence of figural decorations in mosques, other permissible ornamentation substitutes were found. This may have contributed to the flourishing of floral, geometric and calligraphic decorations.

Marble flooring, cladding panels and marble mosaics are also considered a valuable aesthetic contribution to Islamic architecture. A splendid example of marble work is Al-Naser Mohamed Mosque **(Figure 4-27)**. In general, marble craft reached its peak of

sophistication during the Burgi Mamluk and Ottoman periods (Ibrahim & Mostafa, 1992).

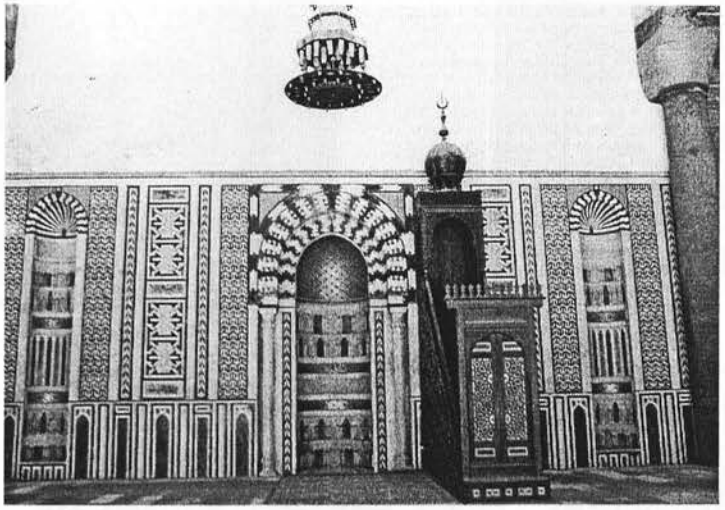


Figure (4-27) Internal elevation of *Quibla* wall in Al-Naser Mohamed Mosque. Source (Ibrahim & Mostafa, 1992).

4.3.9.1 Interlacing Floral Pattern

Floral ornamentation was transferred to Islamic architecture from Sassanian and Byzantine styles. It achieves a contrast between repetitive alterations of light and shade effects, and differences in the intensity of patterning **(Figure 4-28)**. The main vocabulary was grape and palm leaves and stems. Examples of these ornaments can be seen in the window screens and door/window lintels of Al-Zahir Baybras Mosque, which are extremely finely crafted (Ibrahim & Mostafa, 1992).

Symbolically, the growth of plants is upwards towards the sky, which is the refuge for all people during their prayer demanding mercy from God. Furthermore, plants symbolise life, implying that this place is a place for life, including all activities indicating life, and being an institution offering multiple activities and functions for society. Furthermore, the growth of plants is a dynamic process, which complies with the nature of Muslim society being in a continual state of dynamic development (Awad, 2000).

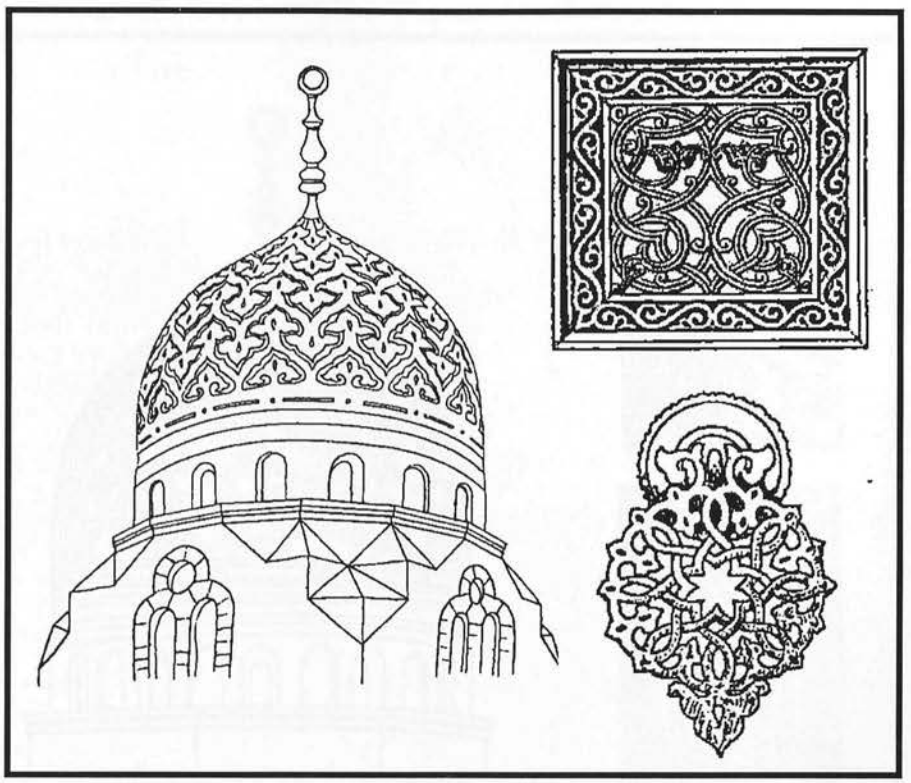


Figure (4-28) Examples of floral ornaments. Source (Waziri, 1999).

4.3.9.2 Geometric Patterns

The geometrical patterns were established upon the repetition of certain geometric units. This started as a simple composition of lines forming interlacing spaces, then became more complicated, creating endless compositions through the combination of geometrical shapes with different proportions. These compositions developed professional, technical and creative capabilities. These patterns demonstrate the genuine artistic background, the deep knowledge and skill of the Muslim artist **(Figure 4-29).** Examples of this pattern can be found in Ibn Tulun Mosque and inside the *Mihrab* of Al-Naser Mohamed Mosque **(Figure 4-27)** (Ibrahim & Mostafa, 1992).

This pattern may be seen as symbolising Muslim society and the interlacing of the pattern represents the demanded closeness and unity of Muslim society in such a beautiful coherent pattern (Awad, 2000).

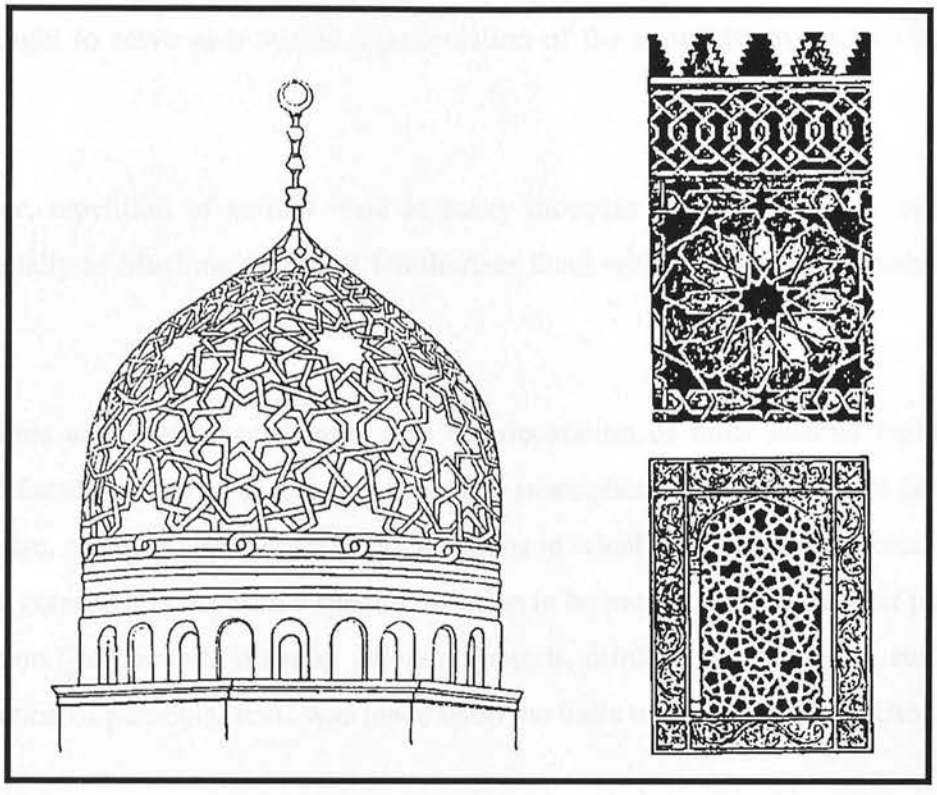


Figure (4-29) Examples of geometric ornaments. Source (Waziri, 1999).

4.3.9.3 Calligraphic Inscriptions

The written texts form of the Quran were considered to be the ultimate religious expression, the visual analogue for divine message, the written word has a special sacred place in Islamic culture, principally because the words of Quran conveyed the divine message (Dodd & Khairallah, 1981).

In Islam, where the Quran is considered to be the actual literal Word of God, copying quotations from it in beautiful fashion is considered valuable. Islamic culture employed the written word, not the image, as the herald of its faith (Lentz, 1987). The beauty of Islamic inscriptions is not limited to their visual impact, they are a unique combination of the verbal and the visual, and their content is a great source of inspiration to Muslims (Siddiq, 1990).

The Quran, or any part thereof in the mosque provides the viewer with a message and focus of mediation. It may incidentally be ornamental or decorative, but a Quranic

inscription has a special value in itself. Like the recitation of the Quran, an act of piety – it is thought to serve as a visible representation of the supernatural reality (Thackston, 1994).

Moreover, repetition of certain texts in many mosques is shown to have contributed educationally to Muslims, in that it familiarises them with Quranic verses they ought to learn.

Inscriptions are found incorporated into the decoration of most Islamic buildings, on external facades, entrances, and interiors. The inscriptions and verses were selected, in some sense, as being appropriate to the locations in which they are found. Relatively few passages consistently occur in a specific location to be mostly relevant to their placement, whether on *Quibla* wall, *Mihrabs, Minbars*, portals, drink rooms, tombs … etc. In brief, the selection of particular texts was made upon the basis of architectural function (Siddiq, 1990).

Examples of such Quranic verses are: On the mihrab, one can find

> *"Verily! We have seen the turning of your (Mohamed's) face towards the heavens. Surely, We shall turn you to a Quibla (prayer direction) that shall please you, so turn your face in the direction of Al-Masjid Al-Haram (at Makkah). And wheresoever you people are, turn your faces (in prayer) in that direction. Certainly, the people who were given the Scripture (i.e. Jews and the Christians) know well that, that (your turning towards the direction of the Ka'bah at Makkah in prayers) is the truth from their Lord. And Allah is not unaware of what they do".*
>
> (The Holy Quran, 2:144)

On portals and facades, the following verse is written:

> *"The mosques of Allah shall be maintained only by those who believe in Allah and the Last Day, perform As-Salat (Iqamat as-Salat), and give Zakat and fear none but Allah. It is they who are on true guidance".*
>
> (The Holy Quran, 9:18)

The most common used Arabic styles were *Naskh, Kufic* and *Thuluth*. *Kufic* was the very first to be used during the Prophet's time until the Fatimids and Ayyubids, who wrote few historical inscriptions in *Naskh* besides the *Kufic* Quranic verses (Ibrahim & Mostafa,

1992). *Naskh*, reported to have started in the twelfth century (AD), is described as simpler, rounder and taller than *Kufic* **(Figure 4-30)** (Seton-Williams & Stocks, 1988).

Mamluks began the use of the sharp angled *Naskh* script for Quranic verses with the smooth complex *Thuluth* for historic inscription. Where the use of *Kufic* gradually decreased. More calligraphic styles were developed afterwards like *Muhaqqaq*, *Rayhani,* and *Diwani,* as well as a number of other styles. Some of these styles were exaggerated in their complexity, interlacing words in their decorative inscriptions, so that reading them was beyond the ability of an average person (Seton-Williams & Stocks, 1988)

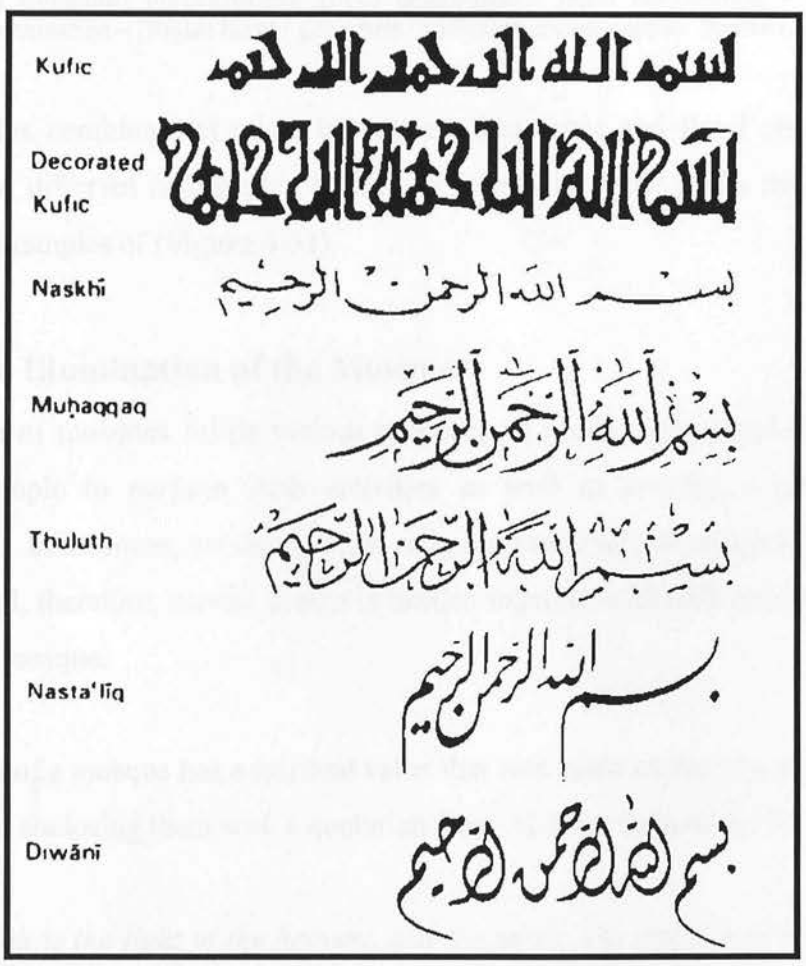


Figure (4-30) Common Arabic calligraphy styles. Source (Seton-Williams & Stocks, 1988).

4.3.9.4 Combined Ornamentation

The above decoration and ornamentation methods have been interchangeably used in gorgeous variable combinations, either side by side in the same element, or even in sometimes more complex and interlacing forms in a single piece of work.

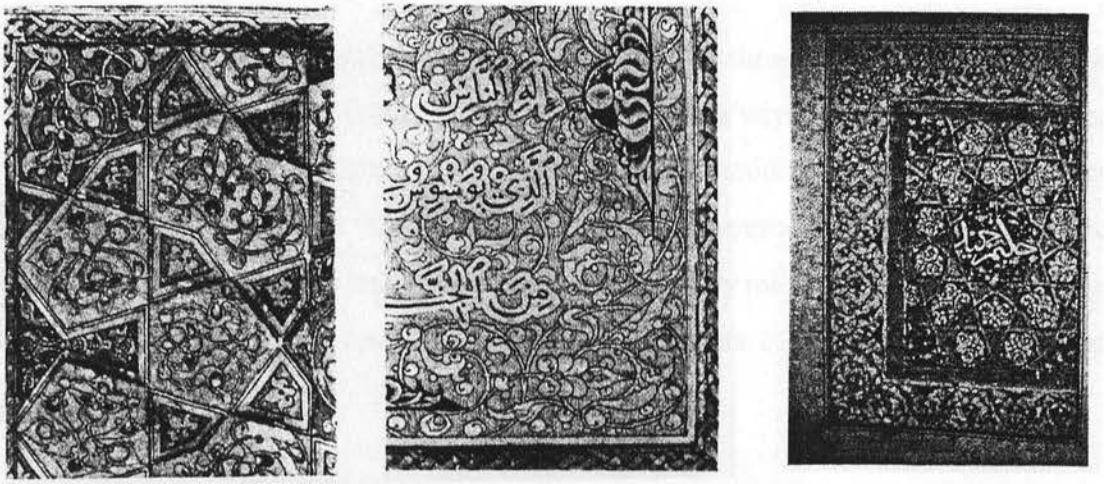


Figure (4-31) Combined ornamentation. (Left) geometrical / floral combination – (Centre) floral / calligraphic combination – (Right) floral / geometric / calligraphic combination. Source (James, 1984).

Such complex combinations might be between geometric and floral ornamentation, or between two different calligraphic styles[5], or even with three styles simultaneously as seen in the examples of **(Figure 4-31)**.

4.3.10 The Illumination of the Mosque

Illumination of mosques fulfils various purposes. It needs to be supplied with enough light for people to perform their activities as well as creating a particular visual environment. In mosques, similar to other religious buildings, an exceptional atmosphere is sought and, therefore, careful design is needed together with sufficient light for all the tasks of the mosque.

Illumination of a mosque has a spiritual value that was made explicit by placing lamps on *Mihrabs* and enclosing them with a quotation from Al-Noor Sura of the Holy Quran

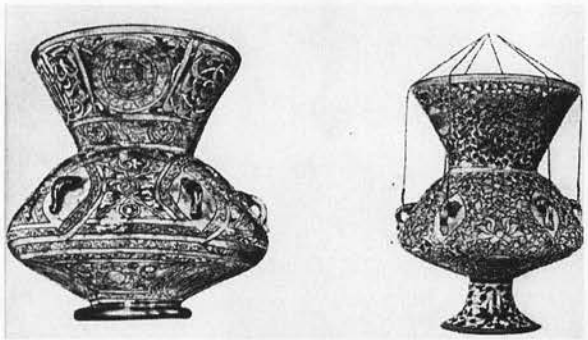
> *"Allah is the light of the heavens and the earth. The parable of his light is as (if there were) a niche and within it a lamp, the lamp is in a glass, the glass as it were a brilliant star..."*
>
> (The Holy Quran 24:35)

This treatment highlighted and acted as a projection of the Word of God, which gives the impression that the Word of God is a source of illumination to the lives of people.

[5] *Thuluth* inscription with *Kufic* boarders was a popular practice in many parts of the Muslim world, including Egypt (Siddiq, 1990)

Torches were first used during the night prayers (having three prayers performed in the dark). Their use was developed by the time of Mua'wiya, when oil lamps were introduced. Afterwards candelabras were used by the Fatimid. Later on, chandeliers and huge lamps suspended from the ceiling[6], were the main source of illumination **(Figures 4-32 & 4-33)**. Finally, it has been a tradition since the early middle ages to light oil lamps around the balcony of the minaret, throughout the nights of religious events (Kuban, 1974).

Lamps from Al-Naser Mohamed Mosque



Lamps from Sultan Hasan Mosque

Lamps from Sultan Barquq Mosque

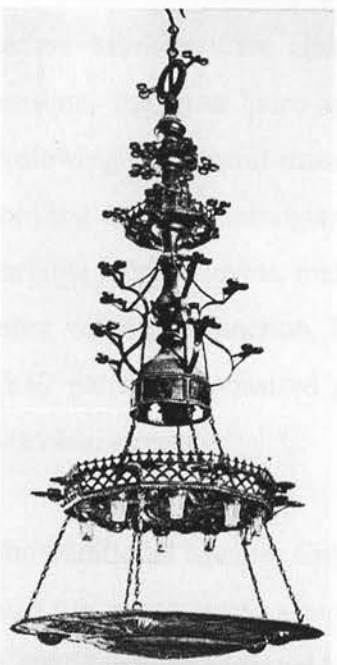
Figure (4-32) Some of the used lamps. Source (The Egyptian Ministry of Waqfs, 1949).

[6] The lamps were sometimes called *Qandils*, which were like a triangular candelabra and were suspended on

(1)

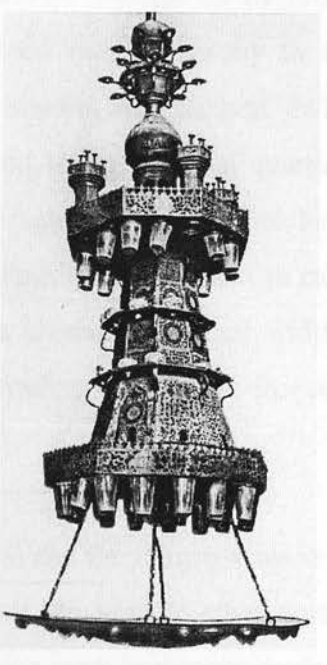
(2)

(3)



(4)

(5)



(6)

Figure (4-33) Some of the used chandeliers. (1) & (2) From Sultan Hasan Mosque. (3) & (4) From Qayetbay Mosque. (5) & (6) From Al-Ghuri Mosque. Source (The Egyptian Ministry of Waqfs, 1949).

a very long chains to a height of just above the man's height (Hillenbrand, 1985).

4.4 Conclusion

This chapter introduced an interpretation of the mosque from a structuralist point of view. The study was carried out on two levels. Firstly, the level of influence of the mosque on the urban structure of the traditional Muslim city. Secondly, the architecture of the mosque itself.

The central location of the mosque has an impact on the spatial configuration of the city to accommodate needed social and cultural transformation. The mosque played a decisive role in structuring the urban centre of the city. The integration of the mosque as an architectural element with the rest of the city and the streets surrounding it, affected the location of various activities as well as the overall form of the city. Hence, it can be concluded that the mosque was not merely integrated into the fabric of the traditional Muslim City, but was a super-ordinate structure that dominated the entire city plan.

The traditional Muslim City is identified by the congregational mosque in its urban centre. Markets were arranged in hierarchical order based on their proximity to the mosque, the most pure is close to the mosque and the impure was farthest away. Following the central mosque there was a subdivision of land into residential quarters, forming socially homogenous groups, who may follow the same profession but have variable income levels, making it possible for rich and poor families to live next to each other without distinction. Finally, roads had different names according to their widths. Their pattern emphasised privacy through use of narrow, winding streets and frequent dead-end streets.

The traditional Muslim City was based upon the privacy of life and the religious sense of such life, representing a supreme symbol of equality between all Muslims. In other words, in studying the traditional Muslim City it is found that one of the most important issues is the public-private relationship within the pattern of urban space. This relationship reflects the fundamental religious concepts of society, responding to concepts of harm, social solidarity, equality, modesty, privacy, responsibility toward neighbours etc.

Architecturally, this chapter introduced a methodology to understand the origins, formation, morphology and the symbolic values of a number of elements of the mosque.

In relation to the origins of these elements, it was found that a number originated in pre-Islamic civilisations. However, it could be concluded that if any element used by certain culture originated in another earlier one, it does not mean that it has the same meanings and significance. The meaning and significance depend on the values identified by the new culture.

Throughout this chapter, a holistic approach was applied, combining both the surface structure of the mosque, its physical appearance, as well as the deep structure. In fact, the deep structure is the part that is inherited by the next generations. It is the genotype that produces the phenotype. The deep structure is, in a sense, an expression of the symbolic dimension and its significance. The substantial point is that symbols and symbolisation work effectively and basically. Changes in laws, regulations, or official structures, will work only if they have symbolic meanings and a symbolic tangible result. Hence, the symbolic influence should be considered before making any changes.

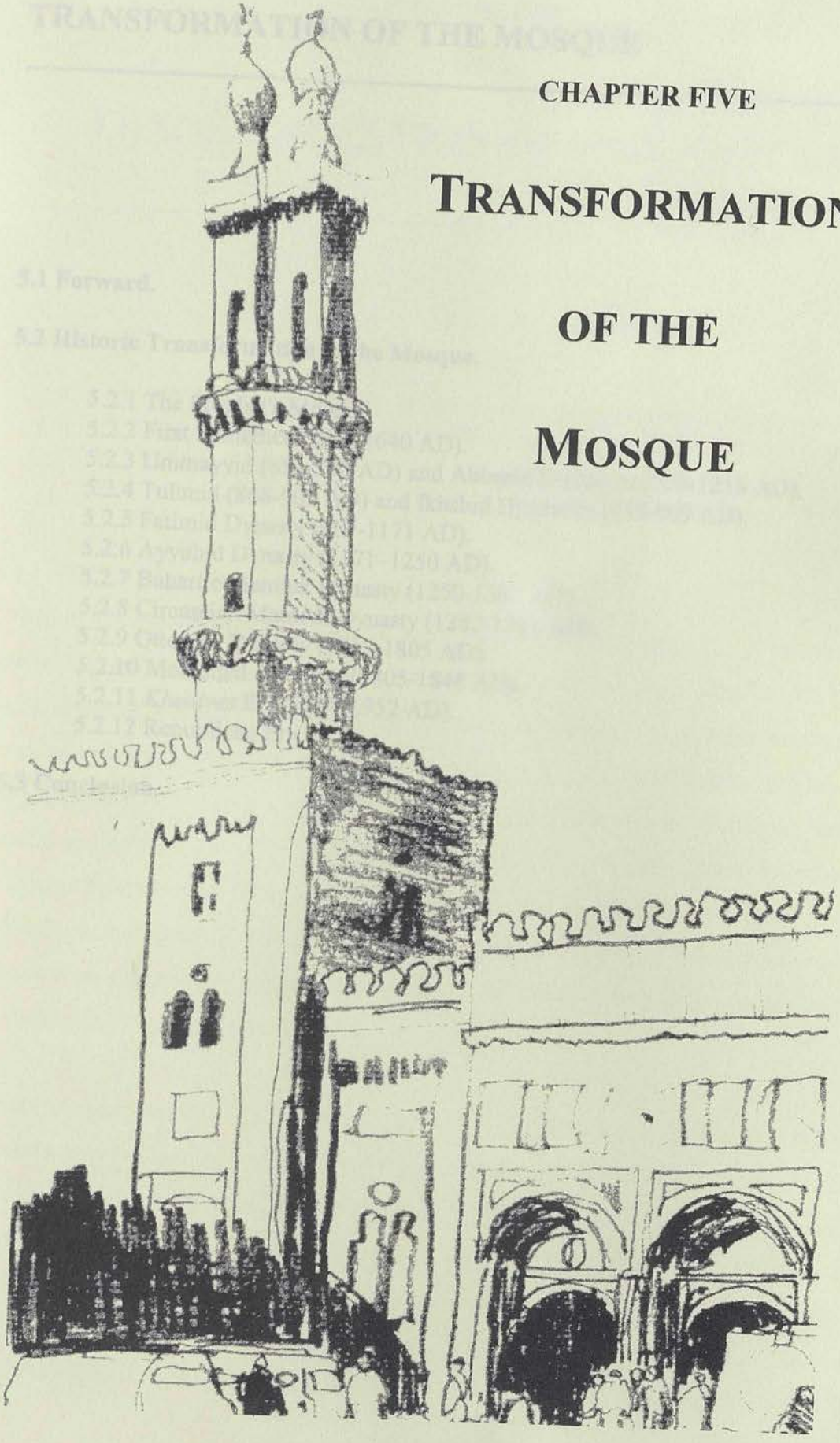
Symbolisation in the mosque is the actualisation of the society's view towards its organisation. This is a process, which creates an opportunity to read the Islamic culture and so enrich it. The development of a system of symbolisation is therefore, directly influenced by the Islamic culture and also directly shapes it. It is one of the most active and dynamic informing processes available to planners and designers.

It is also realised that Islam, with its ideologies and doctrines, played an influential role in shaping the architecture of the mosque. In addition, customs and rituals symbolise the mosque, and they should be designed so as to respond to each other. Rituals can be considered as one of the sources of finding the genotype of the mosque.

The next chapter contributes to the genotype of the Cairene mosque by studying its transformation throughout different historical eras. Starting from first Islamic settlement in Egypt until the contemporary mosque, the discussion will establish the Prophet's mosque as the basic genotypical model as well as the starting point for a system of transformation.

CHAPTER FIVE

TRANSFORMATION OF THE MOSQUE



5

TRANSFORMATION OF THE MOSQUE

5.1 Forward.

5.2 Historic Transformation of the Mosque.

5.2.1 The Prophet's Mosque.
5.2.2 First Settlement since (640 AD).
5.2.3 Ummayyid (661-750 AD) and Abbasid Dynasties (750-1258 AD).
5.2.4 Tulunid (868-905 AD) and Ikhshid Dynasties (935-969 AD).
5.2.5 Fatimid Dynasty (969-1171 AD).
5.2.6 Ayyubid Dynasty (1171–1250 AD).
5.2.7 Baharite Mamluk Dynasty (1250-1382 AD).
5.2.8 Circassian Mamluk Dynasty (1382-1517 AD).
5.2.9 Ottoman Dynasty (1517-1805 AD).
5.2.10 Mohamed Ali's Era (1805-1848 AD).
5.2.11 *Khedives* Era (1848-1952 AD).
5.2.12 Republican Era.

5.3 Conclusion.

CHAPTER FIVE

TRANSFORMATION OF THE MOSQUE

"The city of Cairo stretched out in its maiden glory among orchards and palms, while the four hundred voices from the minarets called the believers to prayer, and rose like incense to the Lord of all."

Arabian Nights, "Tales of the two lives of Sultan Mohamed"

5.1 Forward

Although mosques in Muslim cities share common values, variation is observed in mosque typology. This is due to the spread of Islam over many parts of the world, where each area had different climatic, cultural and ethnic characteristics. In other words, local traditions were assumed to be the basic source of the formal vocabulary of later developments, this being a reflection of the mosque's role as a unique centre for the social and cultural life of Muslim communities, providing an atmosphere of creativity for specifically Islamic art forms. Hence, each Muslim country in turn expressed its own phenotype in the architecture of their mosques (Kuban, 1974). The following discussion focuses on the mosque in the city of Cairo. This setting provides the context within which a diachronic analysis case study is applied.

This chapter applies the theories detailed in previous chapters to mosque transformations in Cairo through the main reigns since the Mosque of the Prophet (pbuh) and the early Muslim settlement in Egypt, until the recent time. This is to diachronically consider the deep and surface characters, subjective and objective meanings, and the connotational and donotational implications of the mosque's structure. This is done by elaborating on the architecture of the mosque and its influence upon the spatial structure of the city, referring to its role in society, as well as tracing it's

evolution and studying which of its features were maintained.

5.2 Historic Transformation of the Mosque

The following research will introduce a study of the area of contemporary Cairo, trying to trace the most characteristic transformations affecting the mosque throughout successive periods, shedding light on the main reigns since the Early Islamic period until the current time **(Figure 5-1)**. Hence, the transformation study is accomplished by looking not only at the mosque in isolation, but also as an integral part of society and the city structure.

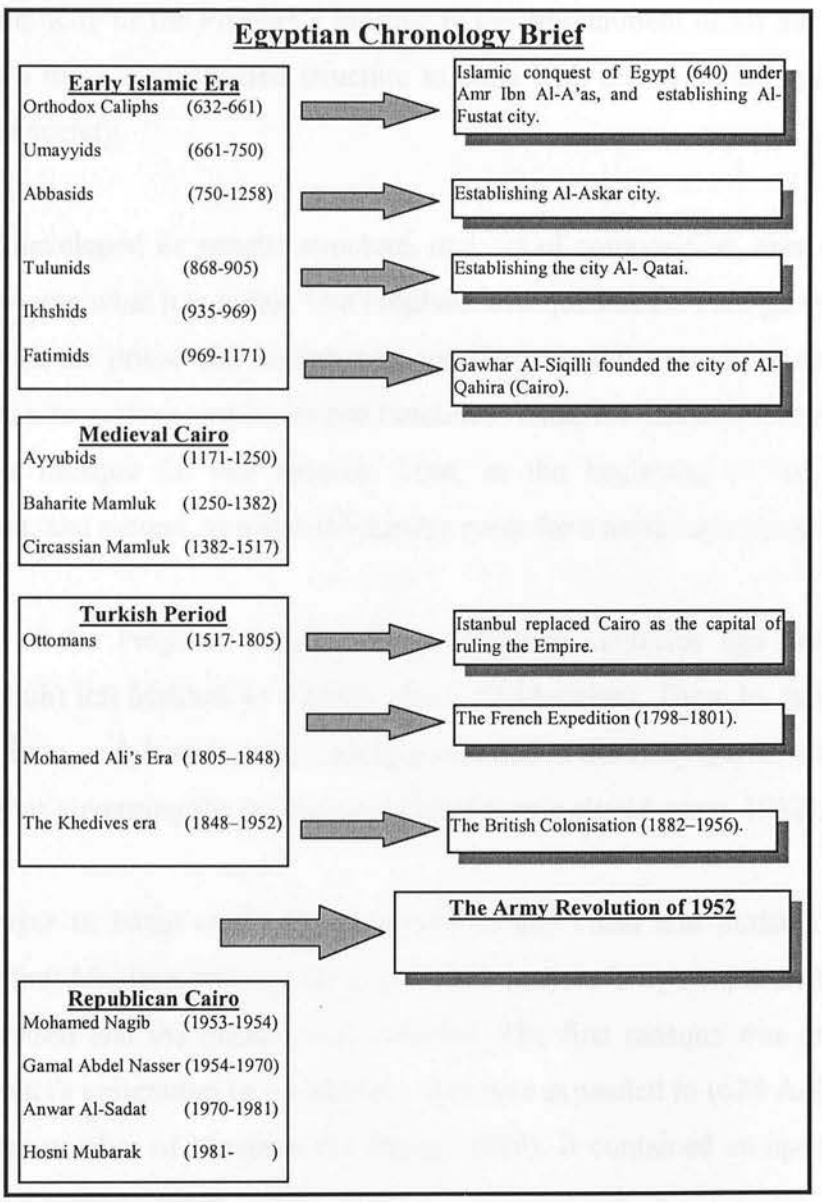


Figure (5-1) A summary of the Egyptian rulers and the major events since the Islamic conquest. Source (The researcher).

5.2.1 The Prophet's Mosque

The study begins with the mosque of Prophet Mohamed (pbuh) as the prototype of all subsequent mosques. It is known that structuralism, although a powerful tool of understanding, needs to identify a structural starting point. The mosque, as a structure, has a clear standing start point in the Prophet's Mosque. Obviously, this mosque does not contain a full genetic image of all mosques, but it is the point where they started their evolution, emerging in its simplest form, but having the potential to develop through a process of transformation.

Thus, the simplicity of the Prophet's mosque is the embodiment of all the potential to develop into a more sophisticated structure to cope with the evolution and increasing complexity of society.

The mosque developed its genetic structure, or laws of composition, over centuries to eventually become what it is today. The Prophets' Mosque initiated the germination of a small seed with the primordial ingredients, and the potential to be developed, through different eras, into various typologies and functions. Thus, the current research considers the Prophet's mosque for two reasons. First, as the beginning of the process of transformation, and second, as a genetic starting point for a more sophisticated role.

The history of the Prophet's mosque began fourteen centuries ago when Prophet Mohamed (pbuh) left Makkah to Yathrib[1] (later Al-Madeina). There he established the first Islamic State, and, based on the concepts revealed in the Holy Quran, set forth most of the principles governing the appearance of the Islamic city (Azzam, 1982).

Although prayer in Islam could be performed in any clean and purified place, and although the first Muslims initially performed their prayers in open spaces, the need for shelter was raised and the mosque was founded. The first mosque was initially built after the Prophet's emigration to Al-Madina, then was expanded in (628 AD) due to the increase in the number of Muslims (Al-Harigi, 1989). It contained an open courtyard,

[1] The city was originally called Yathrib and was established before the migration of Prophet Mohamed by two Arabian tribes named Al-Aws and Al-Khazraj, who were always fighting each other. When the prophet migrated from Makkah to Yathrib he changed its name to be Al-Madina which means the city or

and a southern covered *riwaq* (portico)- as a prayer area. The ceiling was of palm leaves, supported on palm trunks. The northern side had another shaded area for the Prophet (pbuh) to meet his companions (Abdul Fattah, 1979b). It contained no minaret, and calls for prayer were given from the rooftop. This simple design was considered to be a direct response to the needs of the society. This was later called the Prophetic design, and was used in the planning of most of the old mosques, such as in Basra and Kufa in Iraq, Amr in Fustat and Quairawan in North Africa (Khalil, 1994).

Behind this surface structure represented by the building, components, organisation of spaces, form etc. was a deeper structure, exemplified in the role the mosque performed in both spiritual and secular domains. The Prophet's mosque was the first urban construction for Muslims in Al-Madina, and was a meeting place for Muslims to gather, perform prayers, acquire education, receive the Prophet's teachings, discuss their personal and community affairs, keep alms money, and solve litigations and disputes.

After building the mosque, the Prophet (pbuh) constructed his house (this became a tradition in later Islamic Cities with the house of the Caliph or the city's governor), attached to the mosque. This facilitated flexible communication between the governing authority and the public. Since then, the area designated as the main mosque, became the centre of the city, and the *Suq* (market) was located close to the mosque[2]. Subsequent immigrants to the city built their houses around this new centre of Yathrib, spreading outwards in the form of residential quarters (El-Kassar, 2001). The city was small at the time of Prophet Mohamed (pbuh), and the neighbourhoods were mainly in the proximity of the Prophet's mosque. Newly founded Muslim cities followed the same pattern.

The Prophet's mosque has a special religious significance as stated in the following Hadith by the Prophet (pbuh) himself

civilian settlement (Khalil, 1994).

[2] The first market located by the Prophet in Al-Madina was 150 metres away from the mosque with no construction. The first building within the *suq* was constructed by Mu'iwiyah Ibn Abi Sufian, which was followed by a major construction project during the reign of Hisham Ibn Abdel Malik (724-743 AD) (Khalil, 1994).

" A prayer in my mosque is a thousand times better than a prayer in any other mosque, except Al-Masjid Al-Haram."

(Sahih Muslim – Sakhr, 1991)

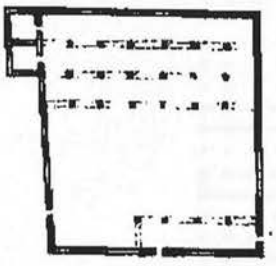
This prompted many Muslim rulers to dedicate special attention to expand its area to accommodate larger number of worshippers. With this expansion the mosque grew to thirty times its original area. The major evolutions are summarised in **(Table 5-1)** below, and explained in the following discussion. Omar Ibn Al-Khattab, the second Orthodox Caliph, expanded the mosque, as did his successor Othman Ibn Affan. By the time of the Ummayyid Caliph, Al-Walid Ibn Abdel Malek, the area of the mosque was expanded from north, east and west; minarets were erected and *mihrab* was added. Then during the reign of the Abbasid Caliph, Al-Mahdi, the mosque's area was increased again. Later, the Ottoman Sultan Abdel Magid undertook the renewal of the mosque's architecture along with an expansion, using courses of red stones and covering the mosque with domes. A school was also added for teaching the Quran. Next the Saudi expansion took place, starting in the year (1950 AD) and lasting for six years. Construction made use of concrete, marble and mosaics, creating very slim columns and arches. This expansion differed from the Ottoman expansion, but was in harmony with it (Abdul Fattah, 1979b).

The last expansions were carried out recently by Saudi King - Fahd Ibn Abdel Aziz. This extension accommodates around 135000 worshippers and includes six minarets of 90 meters height, and increasing the number of entrances to 61, seven of which are major portals **(Figures 5-2, 5-3, 5-4)** (Alam El-Benaa, 1984).

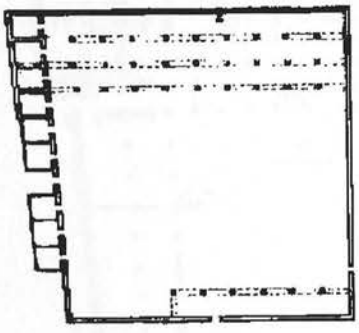
The Expansion	The Year (AD)	Added Area (Sq. m)	Total Area (Sq. m)
The original mosque built by the Prophet (pbuh)	628 AD		2475
The expansion of Omar Ibn Al-Khattab	637 AD	1100	3575
The expansion of Othman Ibn Affan	649-650	496	4071
The expansion of Ummayyid Caliph Al-Walid Ibn Abdel Malek	707-710	2369	6440
The expansion of Abbasid Caliph Al-Mahdi	778-782	2450	8890
The expansion of Mamluk Sultan Al-Ashraf Qayetbay	1481	120	9010

The expansion of the Ottoman Sultan Abdel Magid	1848-61	1293	10303
The expansion of King Abdel Aziz A'l Sud	1950-55	6024	16327
The recent expansions of King Fahd will cover a total area of		65673	82000

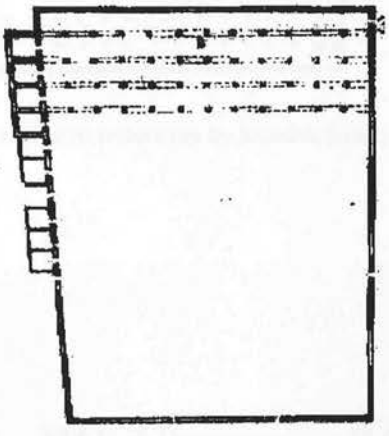
Table (5-1) The expansions of the Prophet's Mosque.



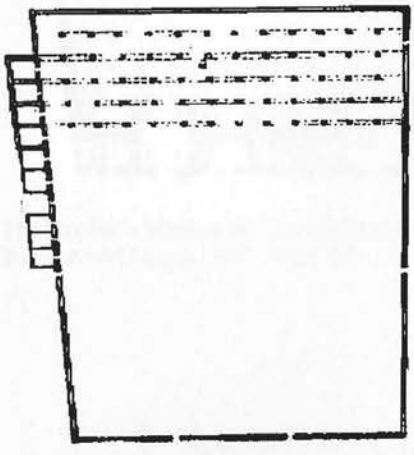
The Prophet's Mosque in 624 AD.



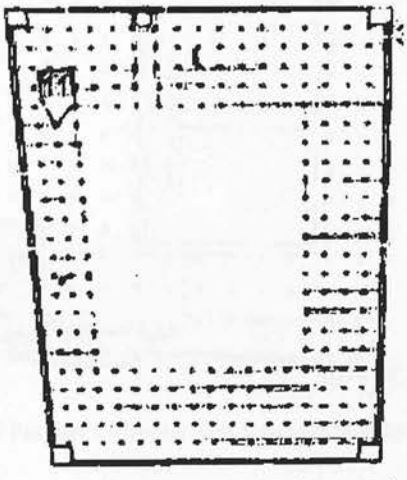
The Prophet's Mosque after the enlargement by the Prophet in 628 AD.



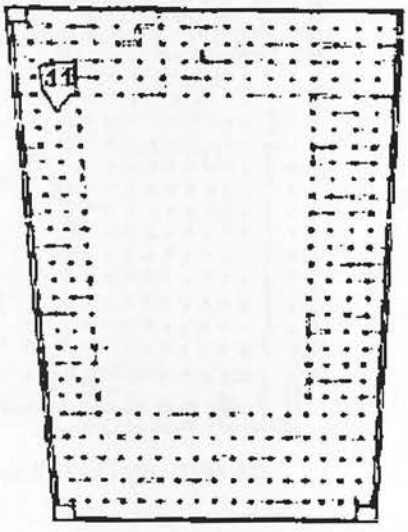
The Prophet's Mosque after the enlargement of Omar in 637 AD.



The Prophet's Mosque after the enlargement of Othman in 650 AD.

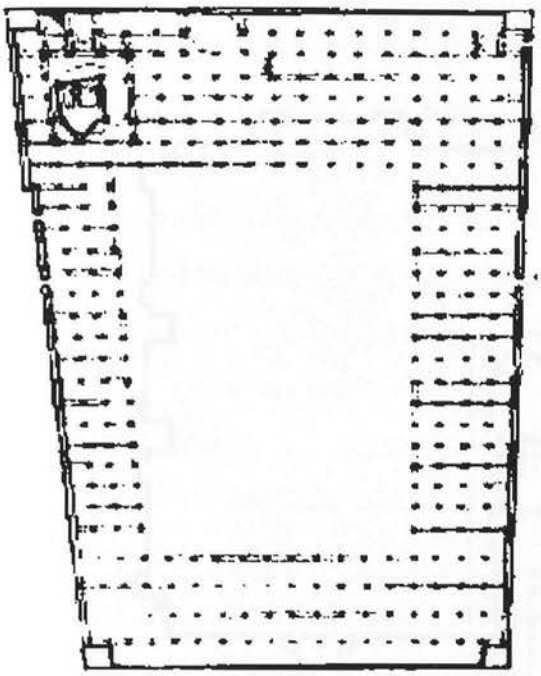


The Prophet's Mosque after the enlargement of the Ummayyid Caliph Al- Walid Ibn Abdel Malek in 707-710 AD.

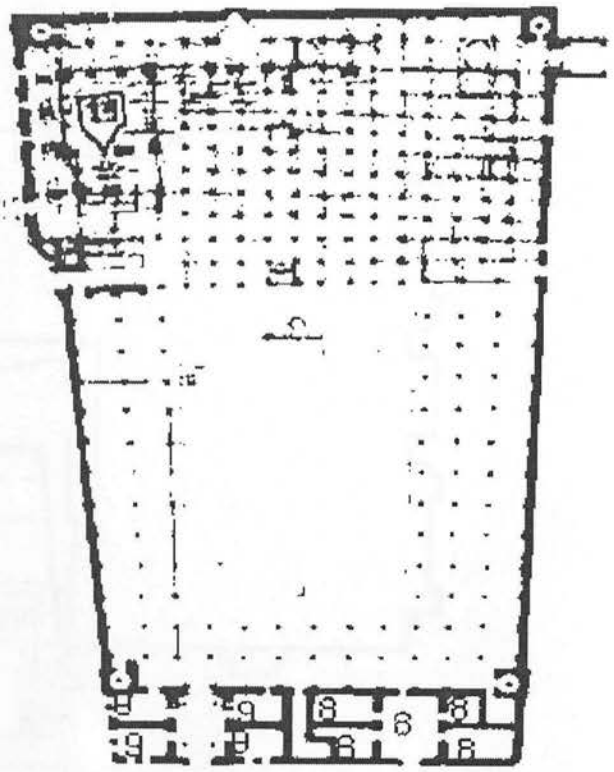


The Prophet's Mosque after the enlargement of the Abbasid Caliph Al- Mahdi 778-782 AD.

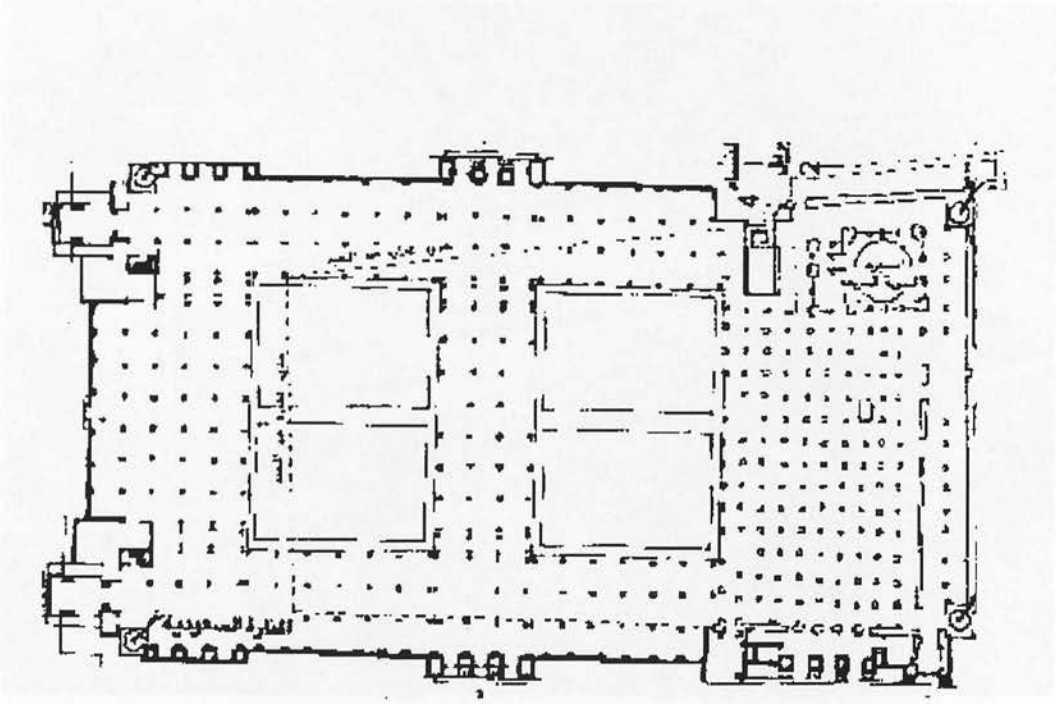
Figure (5-2) The enlargements of the Prophet's Mosque, from the Prophet's time to the Abbasid Era. Source (Kaki, 2000).



The Prophet's Mosque after its restoration by Mamluk Sultan Qayetbay 1481 AD

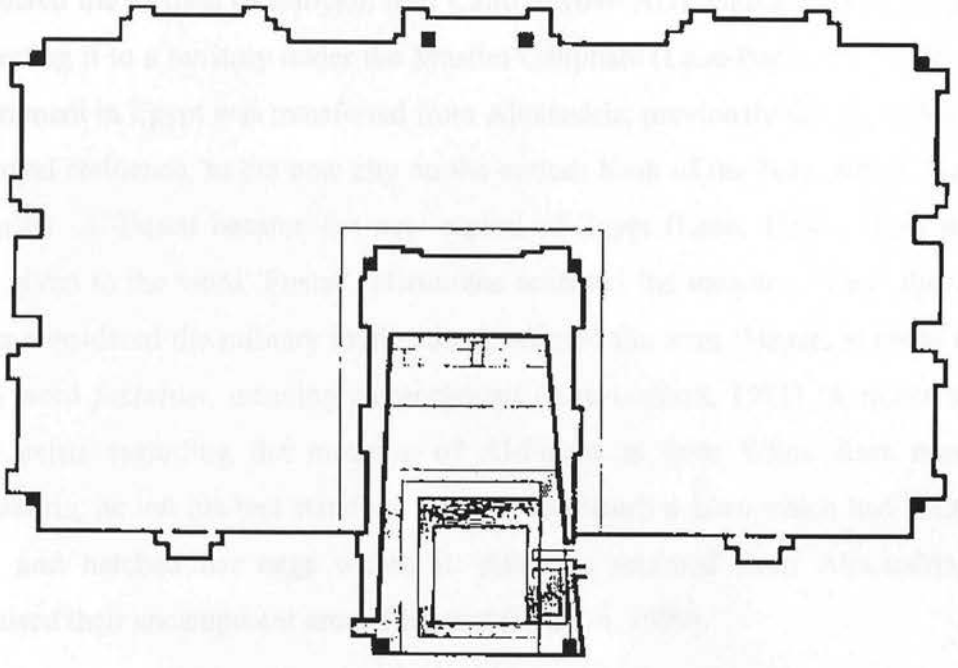


The Prophet's Mosque after its reconstruction by the Ottoman Sultan Abdel Magid. 1848 – 1861 AD.



The Prophet's Mosque after itsenlargement byKing Abdel Aziz A'l Sud 1950 – 1955 AD

Figure (5-3) The enlargements of the Prophet's Mosque, from the Mamluk to the Saudi reign. Source (Kaki, 2000).



The Prophet's Mosque after King Fahd enlargement 1993 AD.

Figure (5-4) The present enlargement of the Prophet's Mosque. Source (Kaki, 2000).

5.2.2 First Settlement in Egypt Since (640 AD)

Islam was first introduced to Egypt when Arab troops, under General Amr Ibn Al-A'as, conquered the fortress of Babylon near Cairo in (640 AD), taking control of Egypt and converting it to a territory under the Muslim Caliphate (Lane-Poole, 1925). The seat of government in Egypt was transferred from Alexandria, previously the governmental seat and royal residence, to the new city on the eastern bank of the Nile, which Amr called Al-Fustat. Al-Fustat became the new capital of Egypt (Lane, 1896). Many meanings were given to the word 'Fustat'. Historians accepted the meaning 'Tent' for it. While others considered the military implications, referred the term 'Fustat' to come from the Latin word *fossatum*, meaning entrenchment (Abu-Lughod, 1971). A rather attractive story exists regarding the meaning of Al-Fustat as tent: When Amr marched to Alexandria, he left his tent standing, refusing to disturb a dove which had built its nest there and hatched her eggs within it. After he returned from Alexandria, troops organised their encampment around his tent (Ibrahim, 1999).

Amr chose the flat land on the east bank of the river due to the natural protective characteristics of the Muqattam Hills on the north and the east, and the Nile on the west **(Figure 5-7)**. He first placed the mosque[3] in the centre of the new city, and beside it he built his own home, inspired by the house-mosque relationship of the Prophet (pbuh) in Al-Madina (Khalil, 1994).

The Mosque's design followed the Prophet's. It covered a rectangular area, was low in height and was supported on the trunks of palm trees. The mosque had a number of entrances, positioned in all walls except the *Quibla* wall. The mosque contained no decoration, and the building materials were kept primitively bare, maintaining its originality and simplicity. It also included a wooden *minbar,* but did not, originally, contain a minaret nor a *mihrab*[4], as was also the case in the Prophet's mosque. The mosque was enlarged, rebuilt and restored many times over its history, until almost nothing of the original structure remained (Ibrahim & Mostafa, 1992).

[3] The mosque of Amr was not only the first in Egypt but in all Africa, and was called Al-Fath Mosque, or the crown of Mosques as the Arabs called it. Later, it had been called Old Mosque, and eventually the Mosque of Amr (Lane-Poole, 1997).

[4] *Mihrab* was added later to both mosques by the Ummayyids during the period of Al-Walid and became an essential part of the mosque since then (Ibrahim and Mostafa, 1992).

The mosque continued to be a centre of science and religion in Egypt, attracting students from abroad, especially Morocco and Andalusia. It educated a number of the best Imams, *Ulama* (scholars) and jurists, who met there for their discussions (Lane-Poole, 1997).

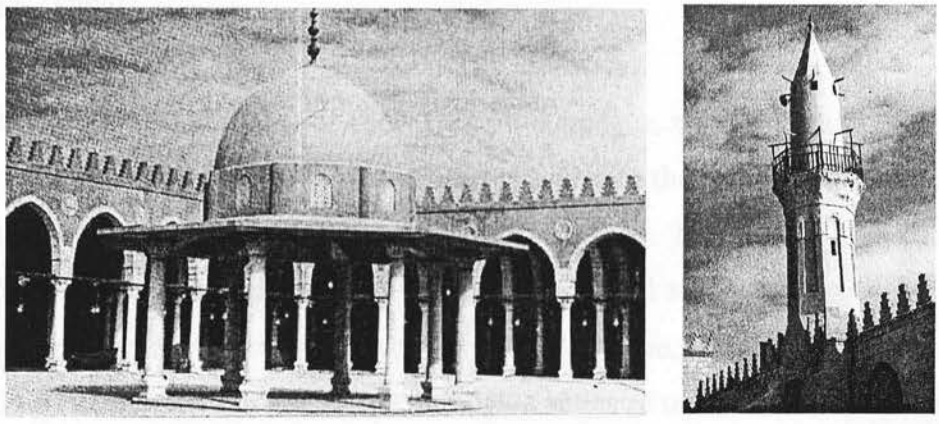


Figure (5-5) The Courtyard and the Minaret of Amr Ibn Al-A'as Mosque after recent development. Source (Ibrahim & Mostafa, 1992)

Al-Fustat's plan was similar to the plan of Al-Madina, but with the addition of another *suq* away from the centre of the city. This second *suq* was located outside the city close to the River Nile for easy access to the river transportation system. Territories surrounding the mosque were distributed between the tribes. The road system connected the different quarters and the *Jami'* or congregational mosque. This mosque unified all quarters and worked as a reference point for the whole city. Afterwards the inhabitants started building houses and urban growth expanded from the four sides of the mosque. This resulted in the compactness of the present pattern of the old Muslim City creating what looks like one continuous structure with narrow alleyways and lanes. Each quarter of Al-Fustat was almost self-sufficient, containing its own private and public utilities (Khalil, 1994).

5.2.3 Ummayyid (661-750 AD) and Abbasid Dynasties (750-1258 AD)

For the first time since the Prophet's time, the Ummayyids moved the seat of the Islamic Caliphate to Damascus - Syria in the year (661 AD). The majority of Umayyid architecture was developed in Syria and its surroundings, with Al-Fustat receiving little attention. No new mosques were built in Egypt, with only additions and modifications

being introduced to the Mosque of Amr Ibn Al-A'as (Lane-Poole, 1997).

The additions to Amr's mosque were the four minarets, and a *mihrab* to identify the *Quibla* direction and the Imam's place in the mosque (Abouseif, 1985). The *riwaq* system was also introduced, and a water fountain for ablution was added at the centre of the court to comply with the pattern developed in Damascus Great Mosque (Ibrahim & Mostafa, 1992).

The minarets, located at the four corners of the mosque, were solid low square towers. They were provided with external ladders for access to the minaret-tops, so that people can hear the prayer call clearly in all sides of the city. The *mihrab* was one addition introduced by the Umayyids, which was continued in all subsequent mosques. This was a transformation in the law of composition of the mosque, accommodating itself into its genetic structure. The minaret passed through a series of transformations before arriving at the form we see today.

The *riwaq* plan consists of four covered areas (*riwaqs*), surrounding a courtyard, the deepest of which is in the *Quibla* direction. However, the Umayyid extension to the Mosque of Amr Ibn El-Aas introduced three more *riwaqs* around the courtyard, and increased the depth of the *Quibla riwaq*, which was the only covered area in the initial design. The *riwaq* plan achieved its highest popularity during the Mamluk era, which is discussed under (5.2.8) in this chapter.

The water fountain had a number of functions. It provided water for people to wash before prayer, and acted as an effective way to improve the mosque's macro-climate. It also created a pleasant aesthetic effect to the open court, reflecting on people's psychological comfort and tranquillity.

In addition to the above functions, the fountain has deeper underlying meanings. Water is a representative of nature, life, continuity and energy. Water was crucial for the agricultural civilisation (as in ancient Egypt and Syria). This representation links the mosque and the religion to every individual's life, using local vocabulary. The message is that the mosque is part of your life. One can settle here - by the water - to create life,

to develop knowledge and faith, and to advance an outstanding civilisation, just as did their ancestors by the banks of the Nile.

The introduction of water piping and modern sewage systems resulted in mosque designers discarding the water fountain. This replaces the fountain on the functional and surface level, but not at the deep structural level, and dismisses the symbolic, indirect role of the water fountains discussed above.

A harsh conflict took place between the Ummayyids and the Abbasids for dominance over the Islamic Empire, which resulted in the burning of large areas of Fustat. This dispute ended in victory for the Abbasids, and the seat of Caliphate was moved from Damascus to Baghdad in Iraq (Abu-Lughod, 1971).

The Abbasids built a new official capital in Egypt to the Northeast of Al-Fustat in (752 AD), and called it Al-Askar 'i.e. cantonment'. This now corresponds to the district of Sayyida Zeinab (Antoniou, 1998). In Al-Askar the mosque (and *Dar Al-Imara*) continued to act as a superordinate component of the city structure, being located at the very heart of the city centre, and surrounded by concentrated markets. After a century had passed, the two communities mixed together, and the combined settlements of Al-Fustat and Al-Askar was renamed Fustat (Abu-Lughod, 1971).

A significant transformation took place during the late Abbasid years (852 AD), when Turk[5] governors were appointed to Egypt. Due to their different backgrounds, these Turk rulers did not consider their role as religious role[6] scarcely leading prayers, and primarily focusing on administrative and political issues. **This was a turning point in the deep structure of the mosque, when part of its social and political role moved to the governor's palaces, symbolising the separation between religion and politics.**

[5] This was in response to strong Persian governors threatening the Abbasid's rule. Therefore, the Abbasids started to buy strong Turkish slaves to protect them, who afterwards became a force that controlled the Abbasids themselves, and started to occupy prestigious jobs in the government. Then they employed their relatives as governors in different regions, and started to rule Egypt in (856 AD) (Lane-Poole, 1997).

[6] The last Arabian governor was called Anbasa and was also the last to take place in the mosque as a prayers leader, which was one of the governor's duties in the absence of the Caliph. After Anbasa's four years of good government, his Turkish successors misruled the country, then Egypt fell into disorder till Ahmad Ibn-Tulun came to rule (Lane-Pool, 1925).

5.2.4 Tulunid (868-905 AD) and Ikhshid Dynasties (935-969 AD)

By the year (868 AD) Ahmed Ibn Tulun, a man of Turkish descent brought-up in Samarraa, was sent to Egypt as a governor. In (870 AD) he selected a site to the Northeast of Al-Askar, on the hill of Yeshkur between Al-Fustat and the Muqattam hills, to found the royal suburb of Al-Qatai, i.e. 'the Wards' or 'fiefs' (Ibrahim, 1999).

Generally, the planning of the Al-Qatai followed the same pattern as Al-fusrat and Al-Askar. At the centre of Al-Qatai was the mosque, the governmental house was on its southern side. The palaces of the ruler and his deputies were preceded by a spacious *maydan* (open space) for sport and tournaments as well as for training soldiers. The fiefs extended around this central area, and a major street linking Ibn Tulun's palace to the mosque penetrated the city. This road was named *Al-Shari' Al-Azim* (the great path) exactly as the one in Samarraa (Khiati, 1986).

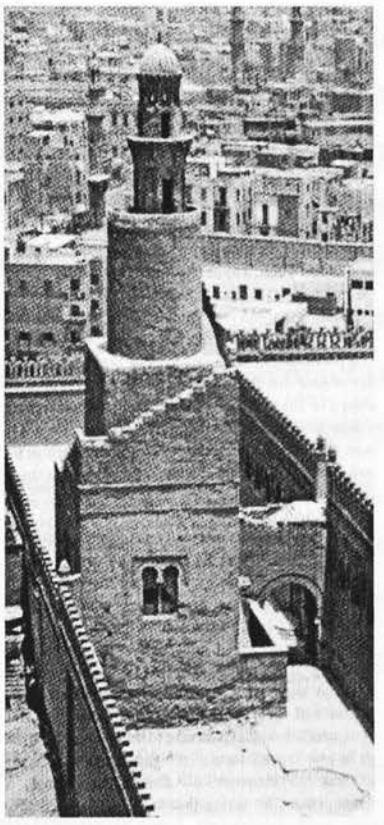
However, Al-Qatai may not be considered as a totally new-built city. It maintained links with Al-Fustat, attracting markets trading luxury products. The main economic centre was kept in Al-Fustat, with its port playing a very important role in the flow of goods (Abu-Lughod, 1971).

Ibn-Tulun's mosque continued to teach the Quran, religious sciences and Arabic literature. In addition, the mosque was a place where *Ulama* and jurists met to debate and discuss critical issues. For the first time, Ibn-Tulun supplied the mosque with a pharmacy, and a physician to deliver medical services to the people (Ibrahim, 1999). **This medical function is a transformation of the mosque's role, which although not persistent in all following mosques, witnessed a recent revival in mosques in Egypt.**

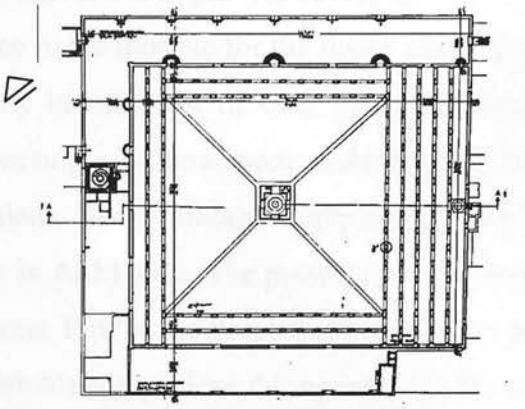
The mosque's design followed the new model of the Ummayyids (the Great Mosque of Damascus) with the area of the mosque increasing, and consisting of four *riwaqs* surrounding the courtyard with the water fountain at the centre **(Figure 5-6)**. Similarly, the deepest of these *riwaqs* was in the *Quibla* direction. In addition a small dome was introduced over *mihrab* (Kuban, 1974). This dome was to emphasise the significant role of the Imams and scholars in leading the Muslims' life.

Pointed arches with botanic decoration are found in this mosque. They were to be perceived as a characteristic feature of Islamic architecture, to the extent that a layman would describe any building with such arches as Islamic. The curvature of these arches represents an affiliation with more humane values and natural vocabulary. The floral and botanical analogies had a major influence on the Egyptian culture, a fact that could be reflected in the preference for such arches in Cairene architecture for centuries after.

The mosque is characterised by a free-standing spiral minaret, which was inspired from the Malwiyya minaret of Samarraa with its external spiral stairway **(Figure 5-6)**.



Full view of the minaret. Source (Abouseif, 1985).



Plan of the mosque. Source (Ibrahim & Mostafa, 1992)

The mosque of Ahmed Ibn Tulun. Source (Abouseif, 1998).

Figure (5-6) The mosque of Ahmed Ibn Tulun.

The minaret had a functional role in conducting prayer calls, as well as acting as a landmark helping people to identify their orientation in relation to the mosque. This function of orientation has connotation with the message of guidance that Islam carries to people, helping people find their way in life, with the guidance of the mosque and its

religious teachings.

A decorative line of stucco, filled with wooden planks, was run above the arches, depicting Quranic verses in Kuffic letters (Margoliouth, 1907). The mosque design represented a combination of the Ummayyid and Abbasid features, dedicating greater concern to decoration and luxury. This became the predominant trend over successive dynasties (Kuban, 1974).

For the first time, the *Quibla* wall had openings leading to *Dar Al-Imara,* (ruling place) and a *maqsura,* near the *mihrab*. The initial motive behind this related to maintaining the connection between the ruling place and the mosque. However, this opening to a special *maqsura* creates a privileged place in the mosque for the rulers' place. This is in contradiction to the principle of equality in the sight of God, and is of significant importance in Islam. This is another example of how poor understanding of deep structures can produce irrelevant solutions. Some authors compare this act to the Prophet's house opening into the Mosque in Al-Madina. The present research suggests a counter-argument built on two main reasons. Firstly, the Prophet (pbuh) used to lead the prayer himself, being in direct contact with his companions during and after the prayers, unlike the Abbasid rulers and their followers who were located in an isolated private *maqsura* in this case. Secondly, one may refer to the fact that Islam privileged scholars and Imams in a way that it accepts the need to provide a special room for Imams to study and prepare, outside of prayer and lecture times. Where in this case the rulers are the privileged, not the Imam, representing a distortion to the rudiments of Islam.

The Tulunids went through a war against the Abbasids, which weakened them significantly and opened the way for Fatimid intervention in Egypt. To overcome such instability, the Turkish leader Mohamed Ibn-Tughg, titled 'the Ikhshid', was appointed to govern Egypt in (935 AD). He settled the internal affairs of Egypt, but his dynasty was so brief that no mosques were attributed to him (Lane-Poole, 1925). The Ikhshids were based in Al-Fustat and made it a commercial metropolis (Abu-Lughod, 1971). This reinstated the mosque of Amr to its previous role as a place for worship and education (Lane-Pool, 1997).

5.2.5 Fatimid Dynasty (969-1171 AD)

Leading the Ismaili Shiite religious movement[7], the Fatimids fought against the sovereignty of the Abbasid Caliphs. Al-Mo'izz, the Fatimid Caliph, selected the general administrator, Gawhar Al-Siqilli, to lead his enormous army to take control of Egypt in (969 AD). His mission was accomplished successfully, and the seat of the Caliphate was transferred to Al-Qahira (Cairo) (Lane-Poole, 1925). The Fatimid's authority was legitimised by Makkah and Al-Madina (Amherst, 1906).

Gawhar had plans for the construction of a new princely city, intended to be the capital of Fatimid Empire. As a site he selected a sandy deserted area extending along the road to Heliopolis, to the Northeast of Al-Fustat **(Figure 5-7)** (Lane, 1896). Gawhar immediately started to construct the new city, which was named Al-Mansooriyah. Four years later, this was changed to be Al-Qahira (the victorious, the triumphant) or Al-Qahira Al-Mo'izziyah, to celebrate the arrival of Al-Mo'izz. Another story about the name Al-Qahira was that the calculations of the astrologers found, by accident, that the moment assigned for groundbreaking was at unfortunate time, as planet Mars (Al-Qahir) was ascendant[8] (Abu-Lughod, 1971).

The new town had a rectangular shape and was built about a mile away from the river, which demarcated its boundaries. Parallel to the canal, through the length of the town, ran a wide road called 'Qasabat Al-Qahira'[9] **(Figure 5-7)** with a series of side-streets cutting across and leading towards the canal (Khiati, 1986).

Al-Qahira had the palace of the Caliph at its centre[10] instead of the mosque. The princely nature of Al-Qahira was expressed in many luxurious aspects, such as the palace's huge area occupying twenty percent of the city area, horse-riding grounds, royal

[7] While the Abbasid were emphasising their hold over Egypt, a new movement was established in Tunisia by (909- 910 AD) that is the Fatimid Caliphate (Abu-Lughod, 1971).

[8] In this regard, Lane-Poole (1997) claims that the name was, then, changed to Al-Qahira by Al-Mo'izz, in hope that the unfavourable prediction will turn to a victorious issue.

[9] It started in Al-Fustat and connected to paths to Suez and Damietta (Antoniou, 1998).

[10] The palace was built by Gawhar as a residence for the Caliph Al-Mo'izz. The palace was built near the eastern wall of Cairo and hence had the name 'the Great Eastern Palace' (this palace did not remain till today). The palace was known for its luxury, large size, very rich finishing materials and grandeur. Another palace was built by Al-Aziz son of Al-Mo'izz to the west of the Great East Palace and so named the Lesser West Palace which was opened on the Garden of Kafur. The two palaces were separated by a wide space called Beyn Al-Qasreyn (between the two palaces), while an underground tunnel connected the two palaces (Ibrahim, 1999).

parks, and the open spaces identifying the palace within the city structure (Antoniou, 1998).

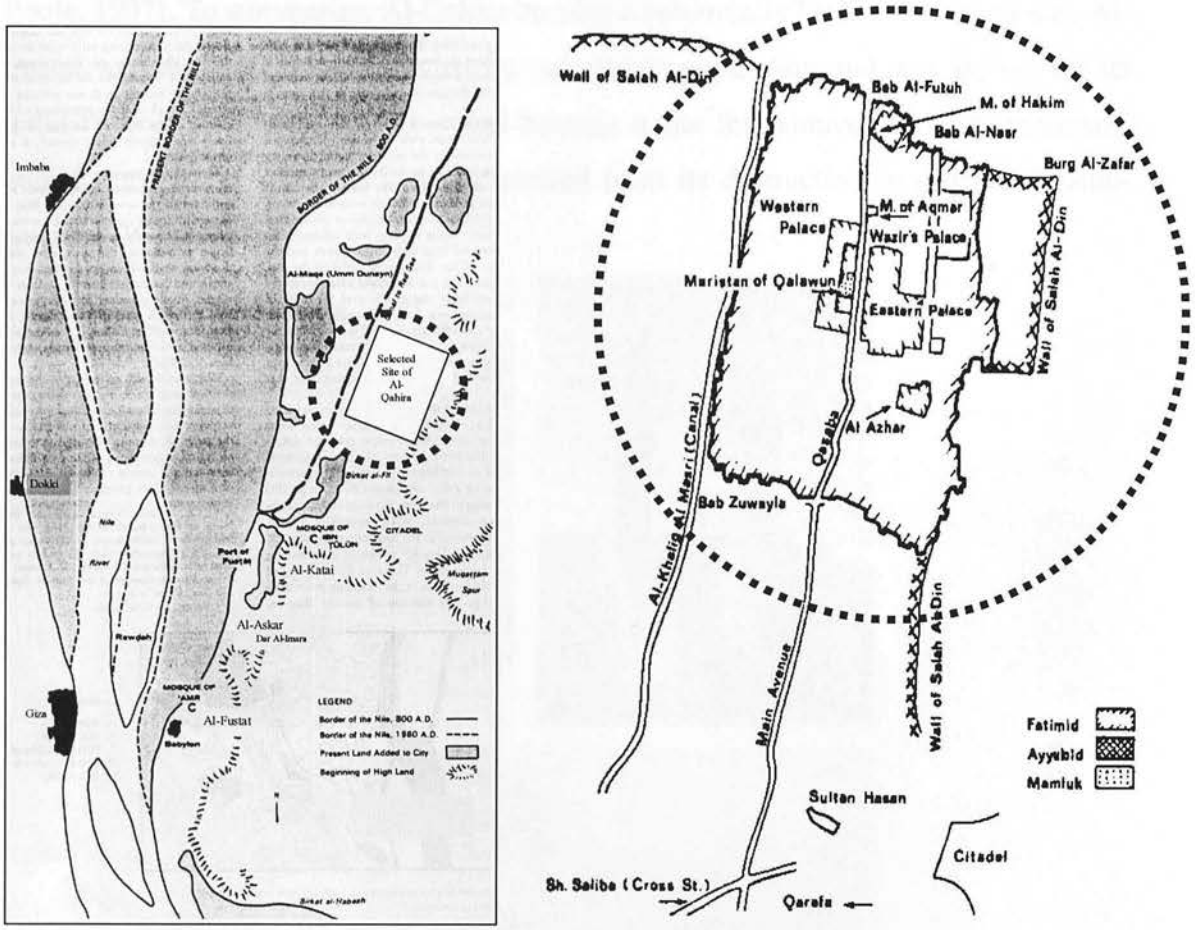


Figure (5-7) Historic map of Cairo. (Left) A map showing the location of the four capitals Al-Fustat, Al-Askar, Al-Katai and Al-Qahira. Source (Abu-Lughod, 1971). (Right) A map showing the Fatimd Cairo as well as both the Ayyubid and the Mamluk developments. Source (Williams, 1985).

This is considered a **major change in the role of the mosque with respect to the spatial structure of the Muslim City**. This also affected the role of the mosque in society. It was no longer the centre of political and religious power, which had shifted towards the palace, and the mosque was situated either in the north or in the south but not in the centre.

Accordingly, Al-Qahira was reserved for the Caliph, his guards, government officers, and troops. To do this, Gawhar built the first wall of Cairo, with four major gates[11] **(Figure 5-8)**. This wall made Cairo a royal castle and gave it the name of 'Al-Qahira Al-

[11] There were two on the South side adjacent to each other called Bab Zuwayla, and two separated gates on the North side, called Bab Al-Fotuh and Bab Al-Nasr.

Mahrousa' (the Guarded). For the same reason, preserving the aristocracy of the city, they excluded their mosques from the city, locating them outside the wall. Hence, the public, who were prohibited from the Royal City, could access these mosques (Lane-Poole, 1997). To summarise, Al-Qahira became a community for the courtly society. Al-Fustat was the larger city occupied by indigenous population and was known for its industry and commerce. Al-Askar had become a site for removed building materials. While the area of Al-Qatai never recovered from its destruction in (905 AD) (Abu-Lughod, 1971).

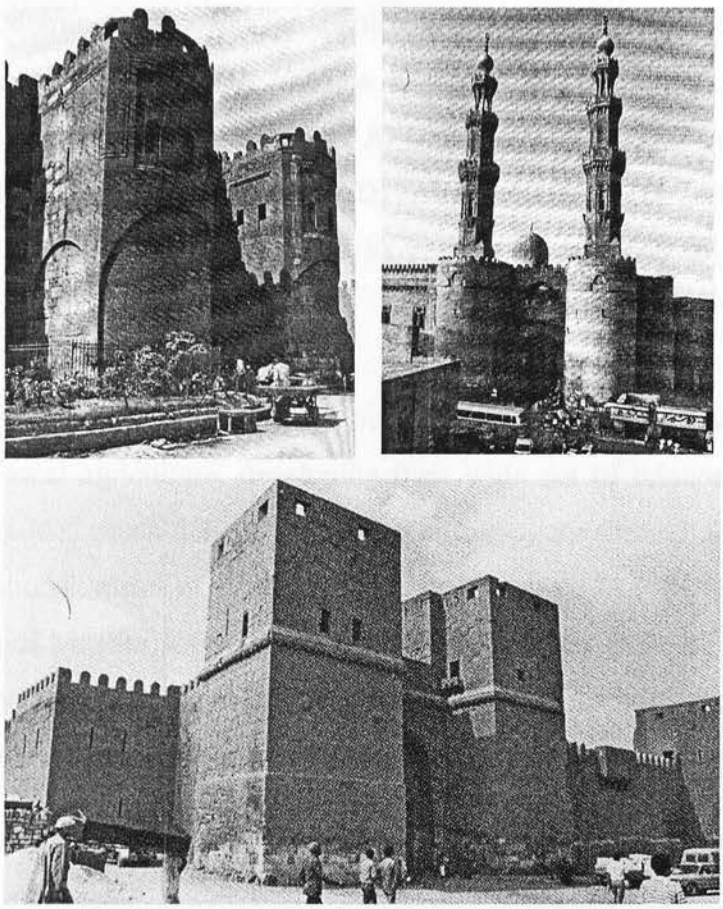


Figure (5-8) The major gates of Cairo's wall showing (Upper Left) Bab Al-Fotuh. (Upper Right) Bab Zuwayla having the minarets of Al-Mu'ayyad Mosque on its top. (Bottom) Bab Al-Nasr. Source (Abouseif, 1998).

The personal interests of some Fatimid rulers deviated from Islamic principles at a variety of levels, prompting them to reduce the role of the mosque and strip it of some of its authority. This authority was moved to luxurious palaces, dissociated from people's lives both physically and subjectively. This move was considered as a total separation between political issues and the mosque which started earlier. Therefore, it could be argued that since this new type of authority did not fully comply with Islam, it

was consequently not eligible to its protection. Thus the rulers sought other protective means, such as the fences, walls, castles, and even preventing people getting close. In previous eras, rulers did not need walls and castles, they were secured because the mosque and the ruling system was already integrated into their life. Thus, such walls can be seen as a way to replace some of the roles of the mosque.

Concluding the situation in Cairo under the Fatimids, Al-Qahira became a community for the governing society. The indigenous population resided in Al-Fustat, which was known as a dominant transport, production and commercial metropolis for its industry and commerce. Al-Askar had become a market for recycling the components of demolished buildings, while the area of Al-Qatai never recovered from its destruction in the Abbasid - Tulunid conflicts (905 AD) (Abu-Lughod, 1971). In the eleventh century the city of Al-Fustat was burned, and its population migrated to Al-Qahirah (Khiati, 1986).

The Fatimids expanded international trade and developed import/export trade at the expense of local agriculture, developing their wide net of relations with Europe and India. They added much delight to the lives of Egyptians through their contrived feasts and celebrations, most of which still remain today. The Fatimids innovated the celebrations of Muslim feasts, the Nile fidelity, and even some Coptic feasts (Ibrahim, 1999). They also encouraged arts, manufacturers, literature, painting, pottery and glassware. Their excellence was at its best in the coverings of the *Kaaba* sent annually to Makkah, to propagate the Caliph's generosity and piety (Amherst, 1906).

One of the chief buildings built by the Fatimids is the Mosque of Al-Azhar[12], built by Gawhar (970-792 AD) to promote the Fatimid Shiite ideology[13] **(Figure 5-9)**. Al-Azhar became a great Islamic University not only in Egypt but in the entire East, and was headed by students from all over the world. Al-Azhar taught different religious sciences, philosophy, logic, mathematics and medicine to students from all over the world, under supervision of the best scholars of their time. It retained its reputation as the greatest

[12] Its name is referred to Lady Fatima Al-Zahraa, daughter of Prophet Mohamed. The present mosque differs completely from the original built by Gawhar, due to the many modifications and additions in following eras.

[13] Same steps, of using the mosque to propagate for Shiite ideology, were followed by descending Fatimid Caliphs.

teaching institution in the Islamic world for more than a thousand years (Ibrahim, 1999).

Figure (5-9) General view of Al-Azhar Mosque. Source (Abouseif, 1998).

Figure (5-10) General view of Al-Hakim Mosque. Source (Ibrahim & Mostafa, 1992).

This may be a significant transformation in the role of the mosque, which continued in following eras. In earlier eras, the mosque determined and lead the policy of the state, whereas in the time of the Fatimids it was used for supporting and propagating state ideologies.

Reflecting the same meaning was the practice of aligning the mosque's external walls with the street, while the interior was oriented towards the *Quibla*. This was achieved by using different wall thicknesses (Ibrahim & Mostafa, 1992). This is in contrast with the previous Muslim city plans, where the street paths were determined in accordance with the building's orientation, creating winding streets, varied visual sequences and shaded areas, which also responded to privacy and climatic requirements. This is an urban representation of the same political conception, forcing the mosque to follow rather than being followed.

Another distinctive Fatimid achievement was the grand Mosque of Al-Hakim **(Figure 5-10)**, which was started during the time of Al-Moizz's successor - Al-Aziz (990 AD), and completed during the reign of his son, Al-Hakim (1005 AD). It was originally founded as *Dar Al-Ilm or Dar Al-Hikma* (Hall of Science). The sciences studied included religious and theological as well as many other secular disciplines. This luxurious academy was provided with a valuable library equipped with every requirement of learning (Lane-Poole, 1925).

The Fatimid's contribution is seen to be more concerned with decoration than the architectural concept. However, the common architectural concept followed the Umayyid pattern explained above (Kuban, 1985). The characteristic concepts introduced to the mosques of this period were the suspended mosque, the wind catchers, and the gabled transept, which are discussed below.

In response to their commercial interests, the Fatimids developed the suspended mosque design. This concept elevated the mosque from ground level, to utilise the area underneath for commercial activities, as in the shops below Al-Saleh Tal'i Mosque shown in **(Figure 5-11)** below (Ibrahim & Mostafa, 1992).

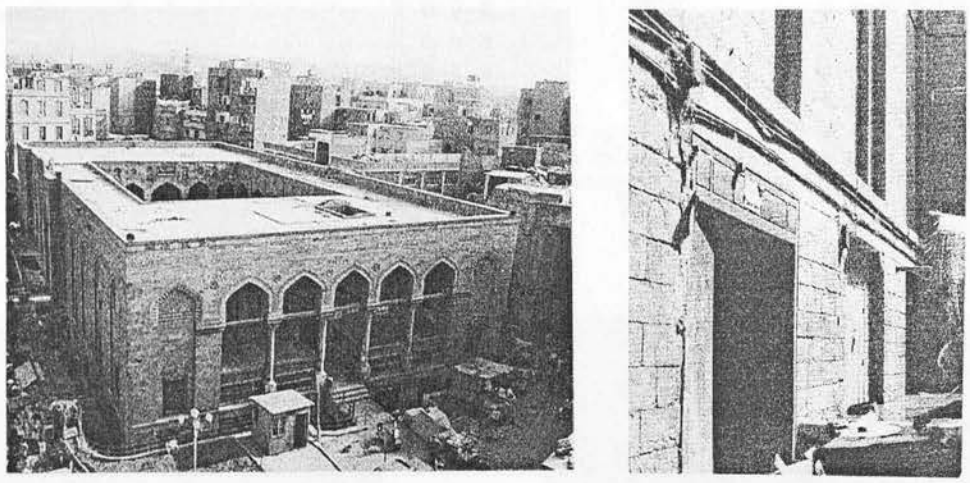


Figure (5-11) Al-Saleh Tal'i Mosque as an example for the Fatimid elevated mosques. Source (Ibrahim & Mostafa, 1992)

The Fatimids' scientific progress associated with the new universities was actualised through the introduction of wind catchers as a mechanism for ventilating and cooling their buildings. This was used for the first time in Al-Saleh Tal'i Mosque over the *minbar* (Ibid.).

Similar to the Umayyid pattern, the Fatimids added an intersecting aisle that lays in the middle of the *Quibla riwaq*, facing the main entrance and leading to the *mihrab*. This had a special roofing system extended parallel to the *Quibla*. Its main function was to emphasise the major axis, which terminates at the *mihrab*. Another reason for having this transept relates to the requirements of royal ceremonies. For example, the gabled facade acted as the processional way, from which the Sultan made his processional

entry. The concept of the transept deviated from Islamic teachings by favouring the rulers, and as a result did not achieve popularity and continuity in the following eras. The only Cairene Mosques adopting the transept motif are Al-Azhar Mosque, Al-Hakim Mosque and Baybars Mosque **(Figure 5-12)** (Hillenbrand, 1985).

Plan of Al-Hakim mosque, showing the intersecting aisle. Source ((Ibrahim & Mostafa, 1992). Emphasis by the researcher.

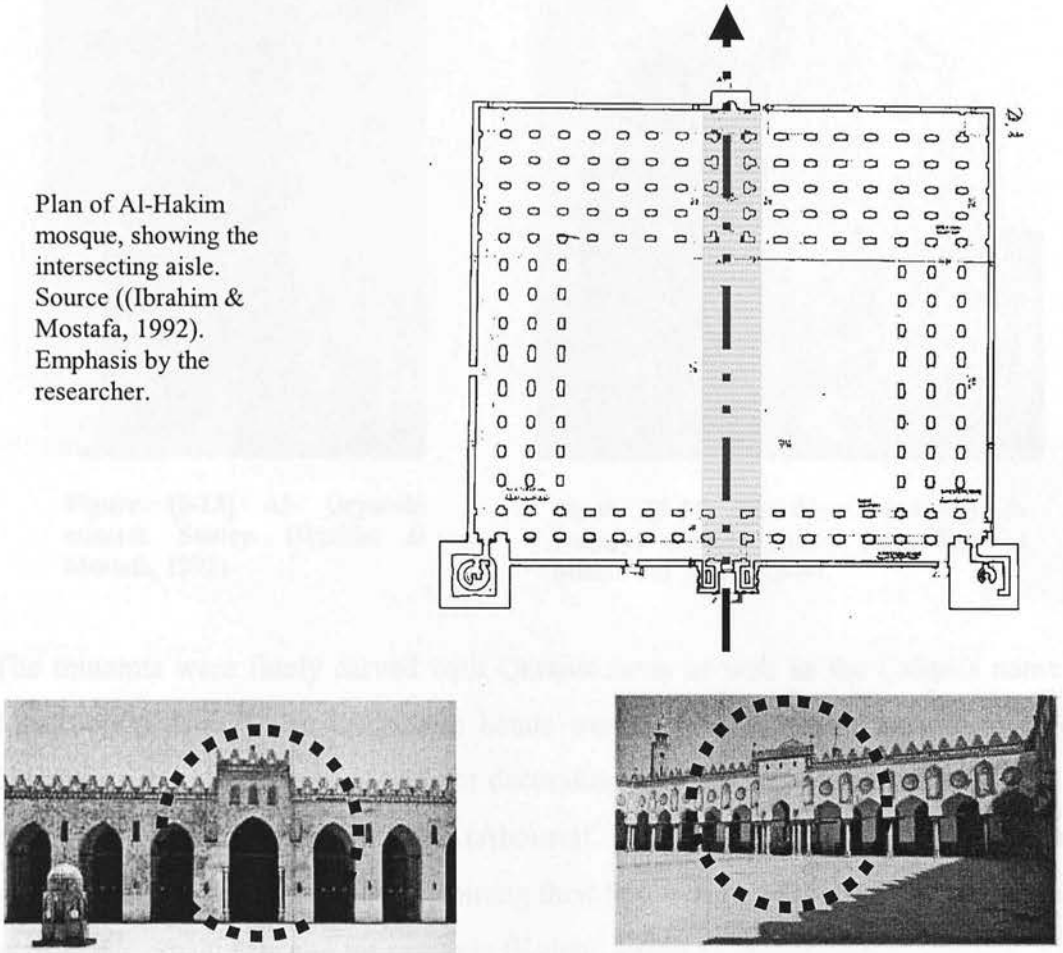


Figure (5-12) The Gabled Transept. (Above) Plan of Al-Hakim Mosque. (Lower left) Al-Azhar Mosque. (Lower right) Al-Hakim Mosque. Source (Ibrahim & Mostafa, 1992)

With regard to decorative aspects, the Fatimids expressed them in almost every element of the mosque. This interest in decoration was associated with the wealth Egypt accumulated during their rule due to the active international trade they developed.

The Fatimids regarded the minaret as a principal element in their mosques, for the decorative reasons given above. It was basically located over the main entrance of the mosque, as in the minaret of Al- Geyuoshi Mosque. Stalactites were first used in Egypt during the Fatimid reign. This was in line with their emphasis on decoration, in addition to their structural function in the treatment of the transitional zone of minaret layers and

domes (Abouseif, 1985).

Figure (5-13) Al- Geyuoshi minaret. Source: (Ibrahim & Mostafa, 1992)

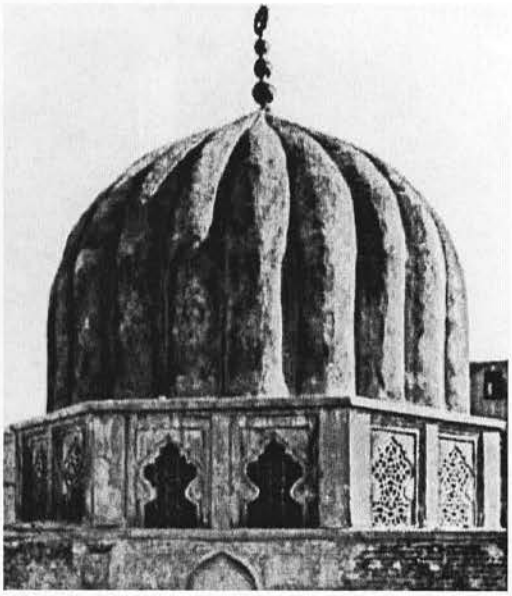


Figure (5-14) The dome of Al-Sayyida Ruqayya Shrine. Source (The Egyptian Ministry of Waqfs, 1949).

The minarets were finely carved with Quranic texts as well as the Caliph's name and construction date. These inscription bands were placed at legible height, to give an impression that they were not only for decoration, making sure that the ruler's name was clearly readable and commemorated (Abouseif, 1985). Another way of commemorating their names was the practice of combining their tombs within the mosques they founded, as in Al-Geyuoshi Mosque for example (Kuban, 1985).

The emphasis on decorative aspects is also seen in the ribbed external plaster covering the Fatimid domes, as in the shrine of Al-Sayyida Ruqayya **(Figure 5-14)** (Waziri, 1986).

In terms of the elevations' vocabulary, the decorative emphases were expressed by the artistic composition of stalactites, niches, openings, floral *Kufic* inscriptions, floral ornaments, stepped cresting **(Figure 5-15)**. Internal ornamentations depend on floral stucco patterns, floral Kufic inscriptions, and stucco windows (Ibrahim & Mostafa, 1992).

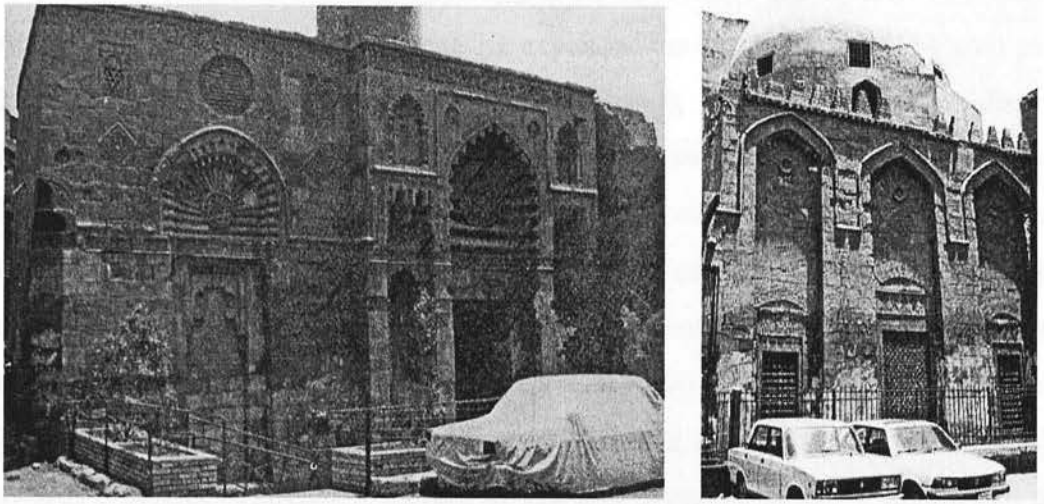


Figure (5-15) Examples for Fatimid facades. (Left) The façade of Al-Aqmar Mosque, showing the niches on the facade. (Right) The facade of Al-Saleh Nagm Al-Din Madrasa showing the added openings. Source (Ibrahim & Mostafa, 1992).

By the late (1040 AD) the Caliph lost his wealth, and Cairo suffered a fatal state of starvation. When the Fatimid rule started to weaken, the Turks, allied with Berbers, controlled the capital (Amherst, 1906). In response to this, Caliph Al-Mustansir appointed Badr Al-Gamaly[14] in (1074 AD) as commander of the army. He successfully expelled the Turks and brought the country under control. Following years of the Fatimid rule were spoiled by continuous conflicts between ministers supported by some groups of the army. Eventually, the Fatimid Empire fell following the death of their last Caliph, Al-Aded, in (1171 AD) (Lane-Poole, 1925).

5.2.6 Ayyubid Dynasty (1171–1250 AD)

Salah Al-Din Al-Ayyubi[15] (a former Fatimid minister) ruled Egypt for twenty-four years. Only eight years of these were spent at Cairo. The rest were spent in campaigns outside Egypt (Syria, Mesopotamia, and Palestine), in the battle to restore occupied Muslim lands, which included the restoration of the Holy City of Jerusalem in the battle

[14] Badr Al- Al-Gamaly was originally from Armenia, and was the governor of Akka before being appointed as the commander of army (Lane-Poole, 1997).

[15] Salah Al-Din Al-Ayyubi was religious, generous, simple in his habits and strict in his life, which obtained the trust of the Egyptians. This did not suite the residence in the luxurious magnificent palaces of the previous Caliphs, so he stayed in the 'House of Wazir', and left these palaces to the officers of the army (Lane-Poole, 1925).

of Hittin (1187 AD) (Lane-Poole, 1925).

However, his part in these wars and struggles did not excuse him from taking care of the country's affairs and its development. He expanded the city to include Al-Fustat and Al-Qatai, continued East-West trade (Yemen-Fustat), and established a distinctive administration system. He was the first to produce a complete design for a great capital. His plan to secure Cairo included the building of a citadel, connected by a defensive wall **(Figure 5-16)**. The citadel dominated the city structure and acted as fortress for his troops, a centre of government and the ruler's residence. However, the Citadel was not completed till long after his death in (1193 AD) (Abu-Lughod, 1971). In this transformation, the political and military dimensions drove the city planning scheme towards a defensive structure, instead of the open sociable pattern characterised by the central mosque that flourished in earlier reigns.

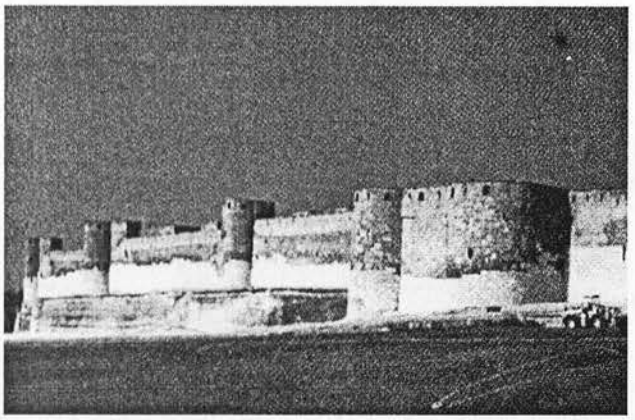


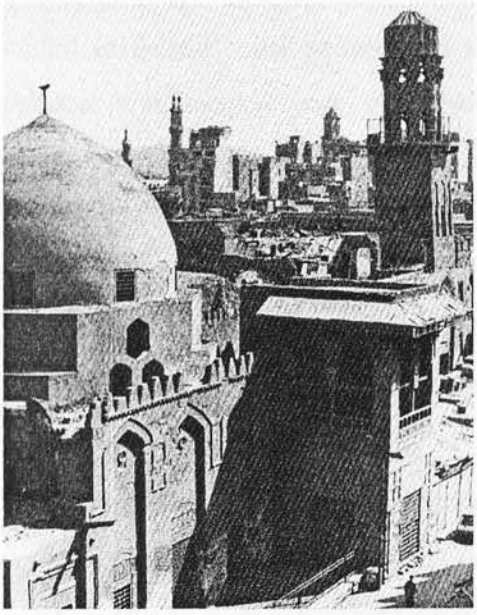
Figure (5-16) General view of the Ayyubid walls of the Citadel of Cairo. Source (Abouseif, 1998).

One of the most famous buildings, Salah Al-Din introduced to Cairo for the first time is the *madrasa* (college mosque),. This was considered **a major turning point in the architecture of the mosque**. He was eager to convey the Shafi'ite (Sunni) theology of Islam to the Egyptians, and he established a number of these colleges. The earliest had been constructed near the tomb of Imam Shafi'i himself in the Southern cemetery. Additionally, he founded the *Maristan* (Hospital, from the Persian *Bimaristan*). Another contribution of Salah Al-Din was the *Khanqah* building, which was primarily established for Islamic studies and inclusive deep analysis (Lane-Poole, 1997).

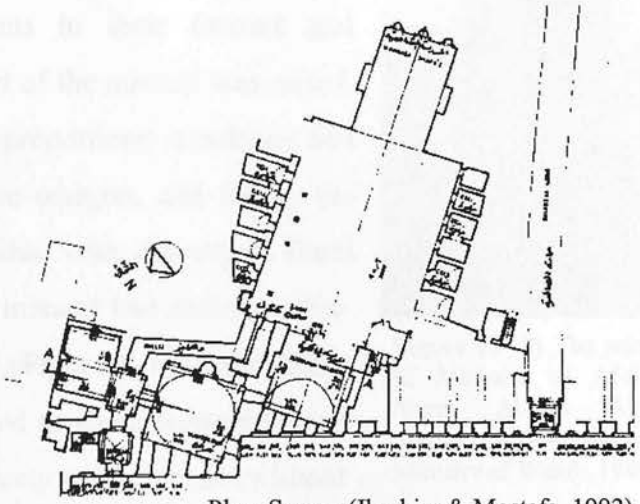
Sultan Al-Kamil (the nephew and second successor of Salah Al-Din) resumed work on

the Citadel in (1207 AD), and built a new palace in the Southern enclosure. In the palace, the Sultan added the hall of justice *iwan*, a mosque, and a library. In addition, he established colleges. Of these was Al-Kamiliyyah School, founded in (1225 AD), named the 'House of Tradition' (*Dar Al-Hadith*) in Nahhasin Street (Margoliouth, 1907). Associating the palace with the mosque was a step intended to give further legitimacy to the role of the palace. In following eras this gradually developed to marginalise the role of the mosque.

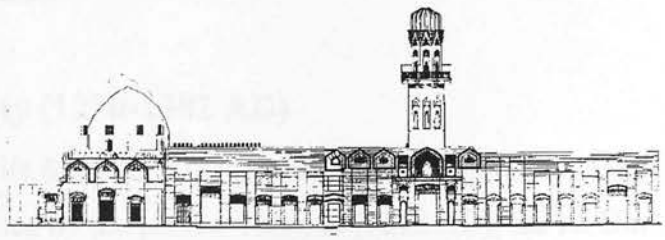
Adel II (Kamil's son) ruled for only two years and was succeeded by his brother Salih (Najm Al-Din Ayyub) who ruled for nine years (1240 – 1249 AD). His reign witnessed the establishment of many schools, which for the first time taught the four Sunni sects, adhering to the openness and liberality of Islam. This principle was followed in colleges built by succeeding Sultans **(Figure 5-17)** (ibid.).



General view. Source (Abouseif, 1998).



Plan. Source (Ibrahim & Mostafa, 1992)



Western façade. Source (Ibrahim & Mostafa, 1992)

Figure (5-17) Madrasa and Mausoleum of Al-Saleh Nagm Al-Din Ayyub.

As a consequence of having this new *Madrasa* typology, the traditional porticoes with

columns disappeared, and were replaced by *iwans*. This transformed the Mosque into a large rectangular (or square) court surrounded by *iwans*. These *iwans* were opened to the court through arched openings, and were covered by a vaulted roof or a half dome supported by corner triangles or corner squinches (Al-Mawe'l, 1993b). In other words, the plan consisted of a central courtyard with two *iwans* opening into it: the *Quibla Iwan* and another facing it. Students' and rectors' (*sheikhs*) cells were located on both sides of the court.

To preserve a quiet environment for learning, the number of entrances was reduced, and their shape was articulated in a bent way. Vestibules were designed as a transitional stage between the external and internal spaces, emphasising the private and quiet nature of the place.

Following the Fatimid obsession with decoration, the Ayyubids developed more decorative elements to their facades and minarets. The height of the upper part of the minaret was raised, to allow further decoration and better proportions. A balcony was added to separate the square and the octagon, and finally the minaret was capped with a *Mabkhara* with decorative floral ornaments. The outer surface of the minaret had arched niches including decorated arched windows **(Figure 5-18)** (Abo Bakr, 1989). The use of balconies continued to characterise minarets in all subsequent reigns, and one scarcely sees a minaret without such balconies, even at the simplest cases.

Figure (5-18) The minaret of Madrasa of Al-Saleh Nagm Al-Din Ayyub. Source (The Egyptian Ministry of Waqfs, 1949)

5.2.7 Baharite Mamluk Dynasty (1250-1382 AD)

After the death of Sultan Salih, his wife Shagarat Al-Durr took over. The idea of having a ruling Queen was not widely accepted by the public. Then, in (1250 AD), Izz Al-Din Aybek, the chief of Baharite Mamluk[16] married Shagarat Al-Durr and became Sultan of Egypt. Thus, for the next one hundred and thirty years, twenty-three Baharite Mamluks

[16] The term 'Mamluks' is originally an Arabic word that means "Those who are owned". They were slave soldiers of different nationalities obtained by Ayyubids. They were housed in a special fortress in the Island of Rawda, and got the name Baharite (of the Sea) Mamluk (Antoniou, 1998).

ruled Egypt, leaving a rich architectural heritage (Lane-Poole, 1997). Prominent examples of Mamluk monuments may include Al-Zahir Baybars Mosque, Al-Zahiriyyah School, Qala'un complex **(Figure 5-19)**, and the Grand Mosque of Sultan Hassan, which is considered to be one of the greatest mosques in the world **(Figure 5-20)**.

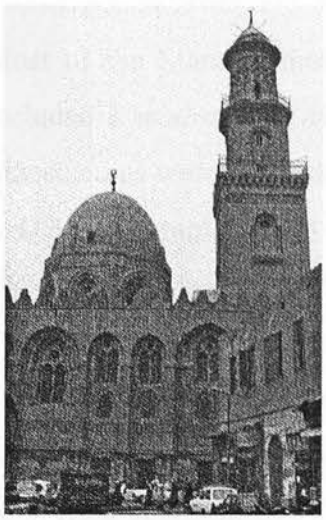


Figure (5-19) The minaret and dome of Sultan Qala'un. Source (Abouseif, 1998).

Figure (5-20) General view of the Madrasa and Mosque of Sultan Hassan. Source (Abouseif, 1998).

As for the city of Al-Qahira, during the two Mamluk periods it expanded to almost five times the size of its original walled nucleus. The city saw a great wave of construction and urbanisation and was influenced by the physical and social characteristics of the Fatimid princely city (Gabr, 1992). Under the Mamluk rule, the gap widened between the rulers and the ruled to a significant and unprecedented degree (Abu-Lughod, 1971).

During the Mamluk period, commerce gained great importance and a large number of *wekalas*, caravanserais and *khans* were built (Khiati, 1986). The minor arts (bowls, perfume-bearers, Quran cases, *kursis*, etc.) of this period were never performed in greater perfection (Lane-Pool, 1925).

After the long Ayyubid ignorance to Al-Azhar, which was based on their ideological conflict with its founders the Fatimids, the Mamluk Sultan Baybars refurbished it and restored its ruined parts (Margoliouth, 1907).

Both the *Riwaq* typology (e.g. mosques of Al-Zahir Baybras and Al-Naser Mohamed)

and the *Iwan* typology (e.g. Qala'un Madrasa and Sultan Hassan Madrasa) continued to be built during the Baharite Mamluk era, but **the characteristic transformation of this period was the increased popularity of mosque complexes. (Figure 4-5)** in chapter four clarifies these typologies.

Most of the Mamluk mosques became part of a larger complex, that in most cases included a *madrasa* or *khanqah,* and the mausoleum of the founder and his family. Mausoleums were either detached or attached to the building (Gabr, 1992). An example is Qala'un complex, built in (1285 AD), which is comprised of a hospital, a mosque, and a tomb (Lane-Poole, 1925).

The external facades reflected the internal design in a way that made it possible to distinguish the facade of a mausoleum from that of the *madrasa*, as well as the *Quibla Iwan* from other *iwans*.

In general the Baharite Mamluk minaret kept its Ayyubid form, except for using the stone as a building material, and increasing the height of the lower square (Abo Bakr, 1989). In regard to its location, the minaret was first kept over the entrance as in the Ayyubid mosques, then it was gradually transferred to be located over one of the door jambs, rather than directly over the portal vault. This was undertaken for aesthetic reasons, particularly after the new treatment of the portal, which was represented in the form of recessed entrance standing in rectangular niche up to the full height of the building and topped by rows of stalactites, as in the entrance of Sultan Hassan Madrasa **(Figure 5-21)** above (Abouseif, 1985).

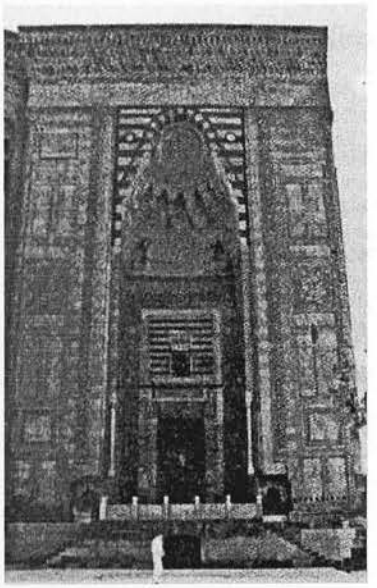


Figure (5-21) The portal of Madrasa of Sultan Hassan. Source (Ibrahim and Mostafa,

However, some of the mosques of this period had two minarets, located where they could be best seen and heard, disregarding symmetry, as in the Mosque of Al-Naser Mohamed for example **(Figure 5-22)**.

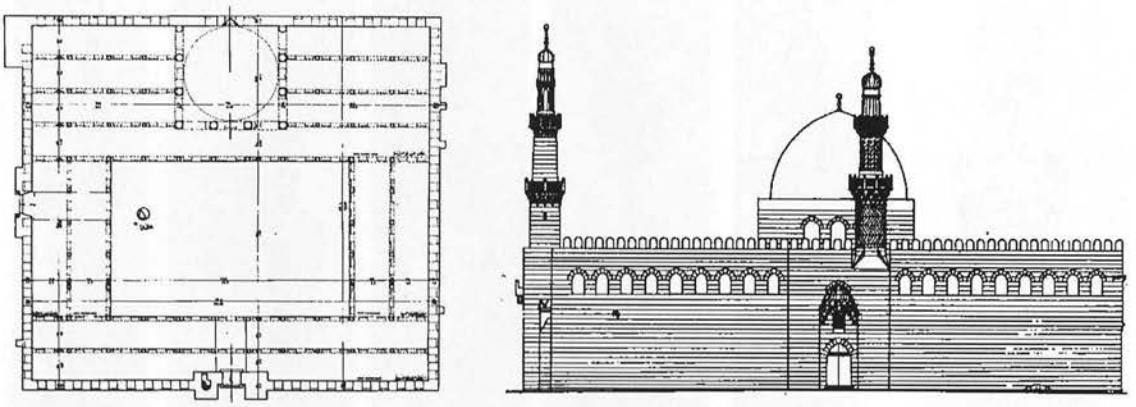


Figure (5-22) The plan and northwestern facade in the Mosque of Al-Naser Mohamed. Source (Ibrahim & Mostafa, 1992)

The evolution of minaret morphology can be seen in **(Figure 5-23)**. First, the octagonal section underneath the crowning dome has been moved to the lower level as in the minaret of Bashtak. Then minarets were constructed to have an octagonal section as the first storey, and a circular section as the second. Afterwards, the first and second stories of the minaret became octagonal sections and were topped with a circular one, as in the minaret of Al-Mardani. There was also the completely circular type as in the minaret of Aqsunqur (Abouseif, 1985). By the end of the Baharite Mamluk era the minaret was developed so that the height of the lower square was extremely reduced, and the shaft was almost lost in the surrounding walls of the mosque. Hence, the visible part of the minaret was the octagonal shaft, with the cylindrical story, as in the minaret of Sarghatmash. Bulb shaped caps replaced the *Mabkhara* at the minaret's top during the fourteenth century and became the characteristic top of the later Mamluk minarets, as in the minaret of Al-Mardani. These were, sometimes, supported on open circular colonnades as in the minaret of Al-Sultan Hassan[17] (Hillenbrand, 1944).

Although, one balcony in a minaret is sufficient for prayer call, the number was increased by the Mamluks and Ottomans for decorative reasons. They had also added stalactites to support the balconies and to enrich their expression. All in all, the Mamluk minaret demonstrated excellence in stalactite carving. Every minaret carried three rows

[17] Al-Sultan Hassan was designed to have four minarets. Two of them were built at the present place that are the eastern and the southern. While the other two were supposed to be located beside the huge portal, yet only one of the two minarets at the portal was built, which collapsed, soon after it was finished, as it killed three hundred children were studying at the *Madrasa*. The thing that lead Al-Sultan Hassan to decide not to complete this minaret neither to build the fourth, and the mosque was kept by the present

of stalactites, each carved differently (Abouseif, 1985).

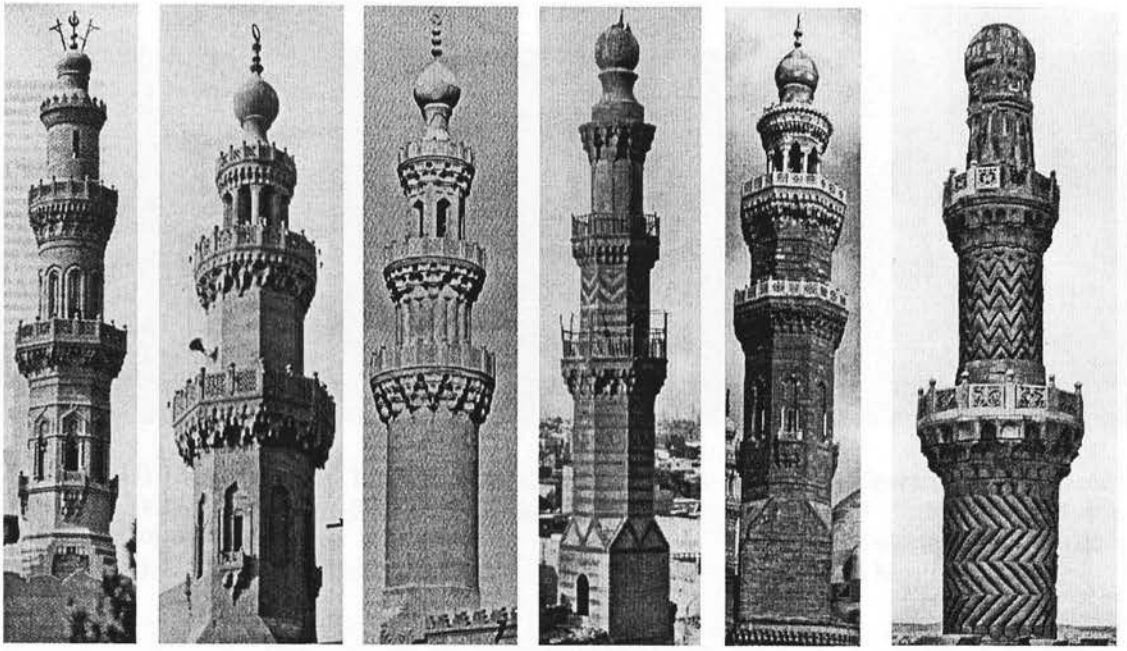


Figure (5-23) A group of Baharite Mamluk minarets. Ordered from left to right the minarets of Bashtak, Al-Mardani and Aqsunqur. Source (Abouseif, 1985). Then the three to the right are the minarets of Sarghatmash, Al-Sultan Hassan and Al-Naser Mohamed. Source (The Egyptian Ministry of Waqfs, 1949).

The Baharite Mamluks adopted a number of techniques to decorate the minarets. For example, they used coloured stone courses in the minaret of the *Madrasa* of Sarghatmash, carved geometrical patterns in the minaret of the Mosque of Al-Naser Mohamed, as seen in **(Figure 5-23)** above (Abo Bakr, 1989).

Although Baharite Mamluks used brick (e.g. Qala'un Mausoleum) and wooden domes (e.g. Al-Zahir Baybras *mihrab*), they were the first to introduce stone domes in Egypt, initially used for crowning minarets. The external decoration of such stone domes was in the fashion of solid stone ribs. These solid ribs formed an additional load, which made the dome cover smaller areas (Kessler, 1976). Later on, these ribs were modified, as they were bent at an oblique angle as in the dome of Ylgay Al-Yusufi **(Figure 5-24)** (Waziri, 1986).

The Baharite Mamluk used two treatments for the transitional zone of the dome. First they used the spherical pendentives as seen in the court prior to Qala'un mausoleum. Second, the number of rows of stalactites was gradually increased till it reached five

two minarets (Nowaiser, 1996).

rows in the Mosque of Al-Naser Mohamed (Ibrahim & Mostafa, 1992).

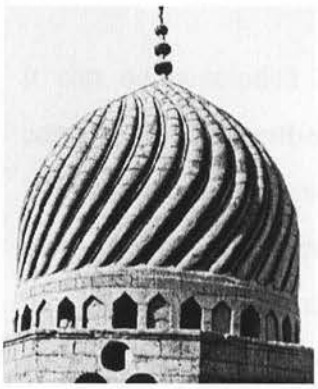


Figure (5-24) The dome of Ylgay Al-Yusufi. Source (The Egyptian Ministry of Waqfs, 1949).

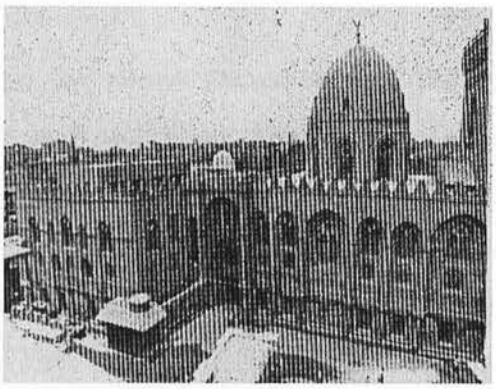


Figure (5-25) Qala'un complex façade. Source (Meinecke, 1980).

Figure (5-26) The façade of Sultan Hassan Madrasa. Source (Ibrahim & Mostafa, 1992).

Tracing the evolution of the openings in the Baharite Mamluk façade, it is found that they used several openings in pointed arch niches, with two openings in each as in the façade of Qala'un complex above. Next, they added another development, placing two windows on top of each other in a niche ending with stalactites as in *Khanqah* of Baybars Al-Gashenkir. Then the number of openings was increased inside the niches as in Sultan Hassan Madrasa (Ibrahim & Mostafa, 1992).

One of the most important features that characterises the Baharite Mamluks' facades is the stripped courses, which were a composition of an alternate courses of limestone and sand stone or red limestone. It is a pre-Islamic Byzantine technique (stone and masonry courses) that was primarily used to enrich the facades (Al-Maw'el, 1994b). Yet, this technique was transferred to Egypt from Syria and was named '*Mushahhar*'. Sometimes black and white marble cladding was used alternatively and was called '*Ablaq*'. It was first used in Cairo in the arches of Al-Zahir Baybras Bridge, then in his mosque. They were also found in the arch accessories and internal facades as in Al-Naser Mohamed Mosque (Shiha, 1992). In regard to cresting, the more sophisticated leaf-shaped cresting started to replace the common stepped cresting (Ibrahim & Mostafa, 1992).

The Mamluks clad their *mihrabs* with marble, or mosaic marble tiles, arranged in geometric and floral patterns. Examples of such work are found at the *mihrab* of

Qala'un Madrasa (Ibrahim & Mostafa, 1992). The Baharite Mamluk *mihrab* had two columns preceding it and were located one at each corner (Al-Sheshtawi, 1979).

It can be concluded from the above discussion that the Mamluk orientation was concerned with aesthetics and decoration. They spent a lot of effort and money to improve the way mosques look, e.g. minaret morphology, dome decoration, mosaic *mihrabs*, complex openings, sophisticated crestings, and stripped courses. At the same time they have undertaken serious action to marginalise its political role, and guard the authority for themselves. Their main agenda was to commemorate themselves as the Fatimids had done during their rule, and after death. This is exemplified in the mausoleums they attached to mosques, and the large sums spent to decorate their mosques and tombs, so that their names would be associated with extraordinary monuments, signifying their faithfulness and piety.

5.2.8 Circassian Mamluk Dynasty (1382-1517 AD)

In (1380 AD), the Mongols, under Timurlane, restarted their conquest, threatening the future of the Mamluk Empire. By this time, the talented general Barquq became the first Circassian Sultan and founder of the Burgi[18] (Citadel) Mamluk dynasty that ruled Egypt until the Ottoman conquest in (1517 AD) (Abu-Lughod, 1971).

Generally, Egypt suffered tragically under the rule of some of the Circassian Mamluk Sultans, with constant conflicts and street fights occurring between the divided Mamluks (Lane-Poole, 1925). It is worth mentioning, in regard to the economic situation, that the main factor sustaining Cairo up through the fifteenth century was the oriental spice trade with Europe. This was despite instability, decreased agricultural production, currency debasement, and recurrent plagues (Abu-Lughod, 1971).

Barquq started the recovery of the country, as reconstruction began again. However, most of the reconstructed buildings were concentrated in the centre of the walled city, with depopulated areas outside the walls (Ibid.).

[18] The other group was the Circassian Mamluks, they were related to the Tatar from the Caucasus. When they came to Cairo they camped in the Citadel, so they were also called Burgi (of the tower) Mamluks (Antoniou, 1998).

Qayetbay extended his territories far beyond Cairo, rebuilt the Citadel and some parts of Cairo's neighbourhoods, and built a number of mosques in Cairo as in Rawda, Kabsh and the cemetery, which is considered as a major architectural achievement and an artistic masterpiece of the Burgi Mamluk **(Figure 5-27)** (Margoliouth, 1907).

Most Burgi Mamluk mosques contained a *madrasa,* mausoleum, residential rooms for the founder and his family, apartments for the residence of rectors (*sheikhs*), and students, drink rooms, and a *kuttab* for teaching young orphans.

The architectural design is based on two different concepts. First, the plan is composed of a central court onto which opens four *iwans*. The *iwans* were of two types. The first is internally divided into *riwaqs* as in Farag Ibn Barquq Khanqah, while the second type is vaulted or covered with wooden roofs. The second typology is based on a covered *durqa'a* in place of the court. The *durq'a* was surrounded by two *iwans* -the *Quibla Iwan* and another opposite to it. There were also two side small *iwans* (*sadlah*), as seen in Qayetbay Madrasa. In both typologies the largest and most decorated *iwan* was *Quibla iwan* that usually contained a *minbar* and a *mihrab*. Both typologies were characterised by the bent entrance. Due to the use of covered *durq'a,* ablution places were placed outside the building mass, in a location exposed to the sun for the longest possible period throughout the day, to avoid having any bad odours entering the mosque.

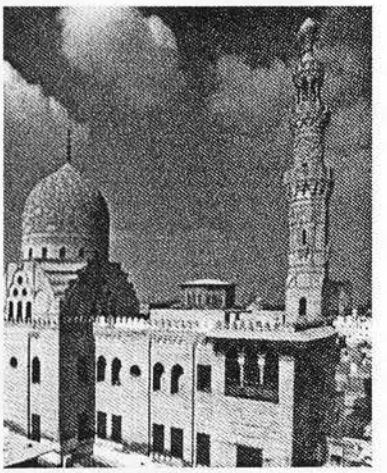


Figure (5-27) General view of the religious funerary complex of Sultan Qayetbay. Source (Abouseif, 1998).

The Circassian Mamluk freed the location of the minaret from centrality and symmetry. If a mosque overlooks two streets, the minaret was either constructed on the more popular crowded side, or at the corner of both facades, so as to be heard by the maximum number of people (Prochazka, 1986).

The most characteristic change took place with the top of the minaret is the introduction of double bulbs or four bulbs instead of the single bulb, as shown in **(Figure 5-28)**

below (Abouseif, 1985). These double bulbs do not comply the embedded meaning (deep structure) of oneness suggested by the minaret, deviating from its origins. These bulbs were derived as a result of the obsession of the Mamluks with the surface structure of the aesthetics and the new forms. **This can be categorised as a change rather than a transformation, representing no clear evolution from the previous genetic structure, and was not continued in following eras.**

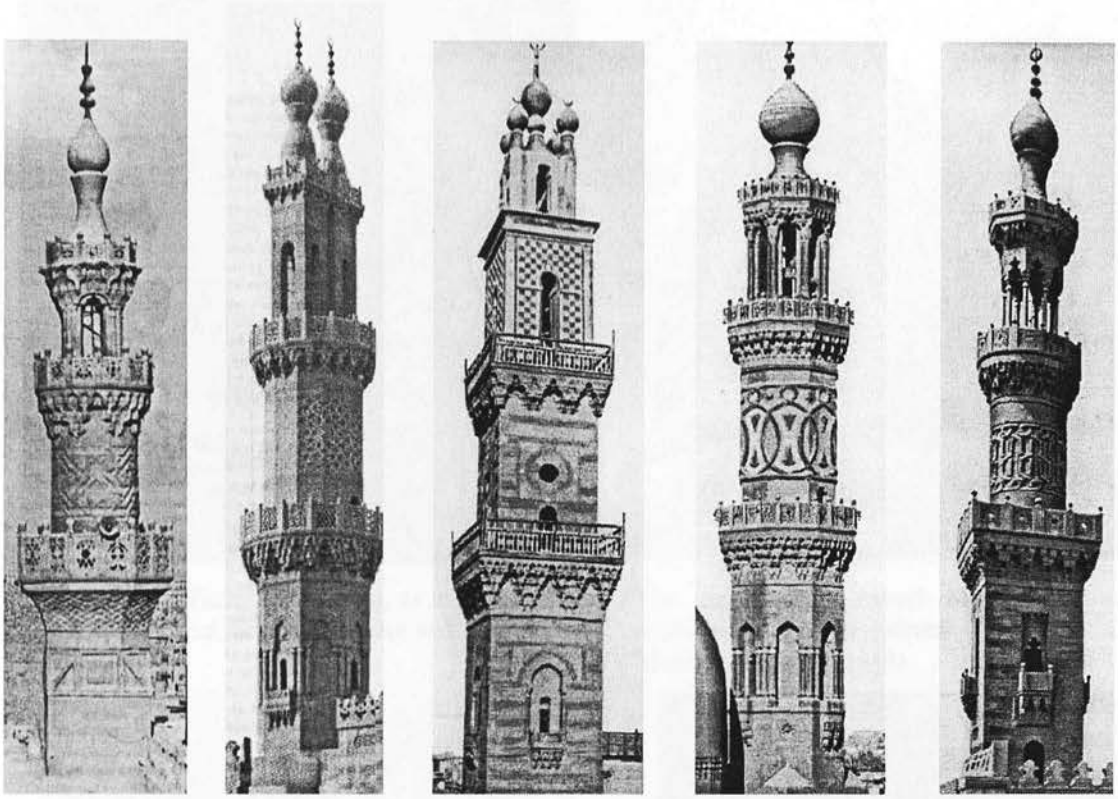
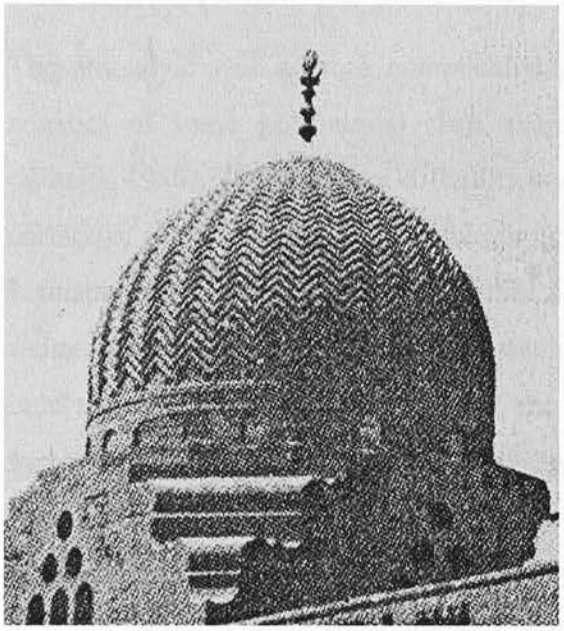


Figure (5-28) A group of Burgi Mamluk minarets. Ordered from left to right the minarets of Madrasa of Qayetbay and Al-Ghuri at Al-Azhar Mosque. Source (Abouseif, 1985). Then the other three minarets are the minarets of the Mosque of Al-Ghuri, the Mosque of Barquq (Al-Mo'izz St.) and the Mosque of Barquq (Mamluk Cemetery). Source (The Egyptian Ministry of Waqfs, 1949).

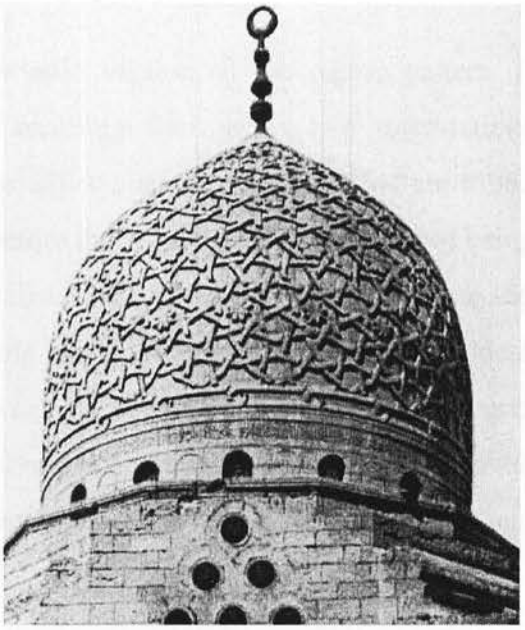
The decoration of the Burgi Mamluk minaret was highly admired. More complex patterns were introduced, using a combination of colonnades, decorative windows, and increase in the number of rows of stalactites and surface patterns. All of these elements made the minaret both very beautiful, and highly distinctive (Kuban, 1974) **(Figure 5-28)**. Marble cladding was used on external surfaces, as in the minaret of the Madrasa Al-Sultan Barquq, in addition to the use of the ornamented arches as in the minaret of Farag Ibn Barquq Khanqah (Ibrahim & Mostafa, 1992). The Burgi Mamluk minaret was also known for the extensive use of inscriptions, that these were illegible in many cases, as in the inscriptions of Qayetbay, suggests that they were made merely for decorative

purposes (Abouseif, 1985).

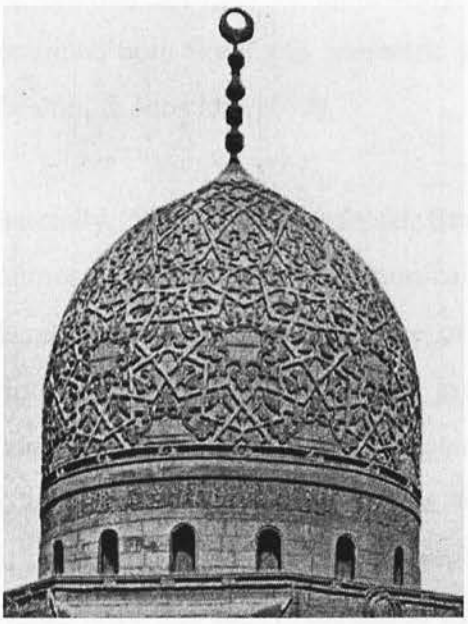
The Circassian Mamluks followed the same structural treatment of domes as the Baharite Mamulus, in terms of materials, structure and transitional zones. Although, they developed a number of decorative patterns on the outer surface of the dome, like the zigzag, star, geometric-floral, and arabesque patterns shown in **(Figure 5-29)** below.



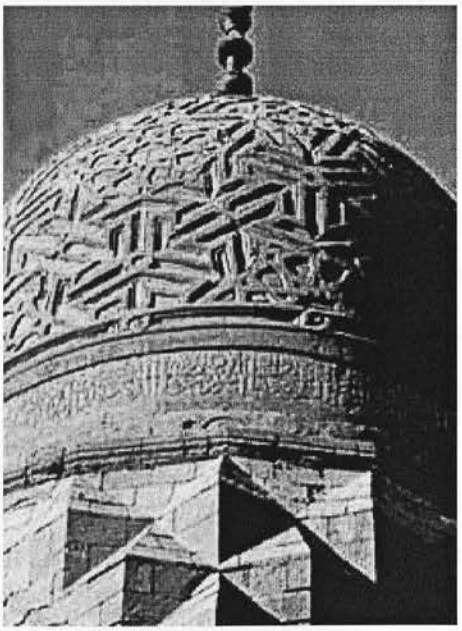
The dome of Farag Ibn Barquq, as an example of zigzag pattern. Source (Ibrahim and Mostafa, 1992).



The dome of Al-Ashraf Bresbay, as an example of the star pattern. (The Egyptian Ministry of Waqfs, 1949).



The dome of Qayetbay at the Mamluk cemetery, as an example of geometric-floral pattern. Source (The Egyptian Ministry of Waqfs, 1949).



The dome of Qunsuwa Abu- Sa'id Mausoleum, as an example of arabesque pattern. Source (SIS, 2003).

Figure (5-29) The patterns of Burgi Mamluk domes.

The concept of the zigzag pattern was based upon the grid created by the underlying structural joints. The zigzag pattern changed its direction at each vertical joint. Going upwards the size of the zigzag was minimised as the size of the stone decreased (Kessler, 1976).

The star style was a more complicated geometric version of the zigzag pattern. It consists of some geometrical clear shapes, resulting from many line intersections (Waziri, 1986). The principal difficulty was to adjust such an integrated pattern to the surface of a dome, which sloped sharply just before the crowning point, instead of being hemispherical. The 16th century sketches contained pattern compositions, sections, and written instructions for the craftsmen, explaining how to transfer two-dimensional ideas onto the three-dimensional surface of the dome. To do this, the builders used a grid system, and calculated the relation between the number of stones in each course and the required width of each design unit to guarantee a precise matching of pattern and circumference (Kessler, 1976).

In the 15th century, floral and geometric patterns were commonly used in decorating the external surfaces of domes. By the end of the 15th century, Muslim architects combined both floral and geometric patterns in decorating domes **(Figure 5-29)** above (Ibrahim & Mostafa, 1992).

Generally, Internal and external Burgi Mamluk facades depended on a vocabulary composed of inscriptions, geometrical and floral engraved patterns, pounded ornaments, altered courses of red and white or black and white bricks **(Figure 5-30)**, vertical windows and grills, leaf-shaped crenellations and vertical rectangular niches, and stalactites. The facades were characterised by reflecting the spaces behind, by the use of different expressions, either by the width or height of the niches, or by openings with different sizes and different distribution patterns. This was applied in such way that the *Quibla iwan* was easily recognised by the projection of the *mihrab* from the wall, or by the round grill over it. The *sabil*, *kuttab*, mausoleum or apartments were also recognisable from the façade. The deep structure behind this approach was to show the different components of the complex in terms of which ruler had built them. This kept

the commemorative tradition originated by earlier dynasties. This also lead to the use of extensive ornamentation.

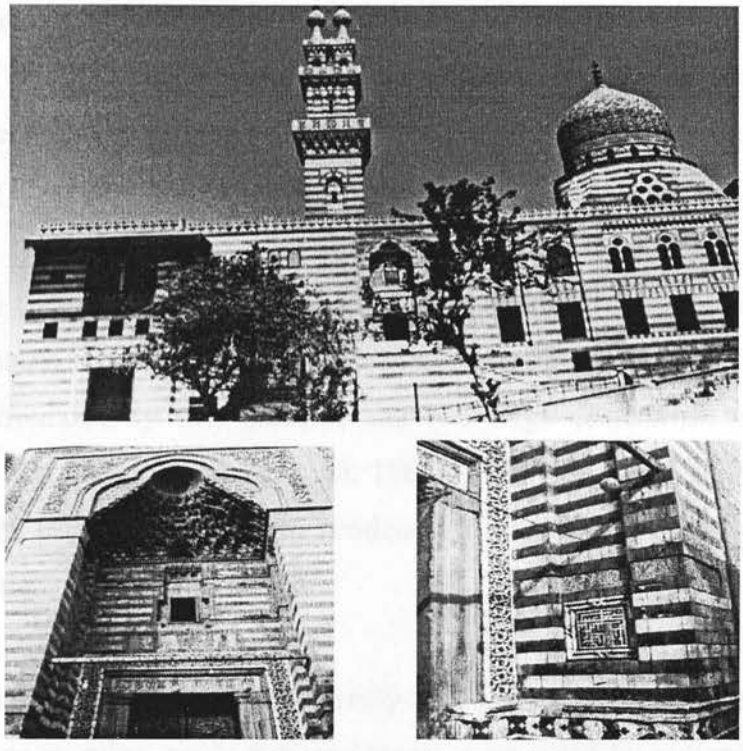


Figure (5-30) The use of stripped courses. (Above) The stripped courses in the façade of Qanybay Al-Ramah Mosque. (Below Left) The stripped courses in the entrance of Al-Mu'ayyad Mosque. (Below Right) a detail in the entrance of Al-Mu'ayyad Mosque. Source (Ibrahim & Mostafa, 1992).

The portals were characteristic facade elements which followed the Baharite Mamluks ornamentation and aesthetic concerns. They were decorated with arches, stalactites, and semi-domes.

The same exterior decorative trend is seen in the evolution of crestings into leaf-shapes, having the solid and void reverse to each other creating a positive and negative motif, covering their outer surfaces with interlaced floral patterns.

One of the main reasons for the decline of the Mamluk reign is the shift of the trade route -the important source of Mamluk prosperity- to the Cape route. This deprived Cairo of its economic assets, and reduced the Mamluk power to the degree that the Mamluks were unable to raise sufficient force to resist the Ottoman Turks, who had turned their attention to the land of the Mamluks (Abu-Lughod, 1971).

5.2.9 Ottoman Dynasty (1517-1805 AD)

When the Ottomans took control of Egypt, Cairo was no longer the head of the Empire, but a provincial capital subordinate to Constantinople. Supreme power was delegated to the Sultan of Turkey, who assigned a representative, *'Pasha',* in Cairo. Egypt was divided into twenty-four districts, each under the authority of a Mamluk Bey, with the *Divan* (Ruling Council) at Cairo (Amhrest, 1906).

The city of Al-Qahirah, which had still retained its medieval features until the first half of the 18th century, was divided in two by a major axis running from north to south. The town was surrounded by vast gardens, and two large cemeteries, whose area was equivalent to half the city's size (Khiati, 1986). Specialised markets were distributed within the city, each combined with residences for tradesmen and inns for transient merchants (Khiati, 1986).

The hardest time was during the last twenty-five years of the eighteenth century. The countryside was in ruins, roads between towns were ruled by outlaws. Taxation had been oppressive, and farmers deserted their villages. Three natural disasters that decimated the population followed one another: a famine; then a plague; and lastly a flood of the Nile (Abu-Lughod, 1971).

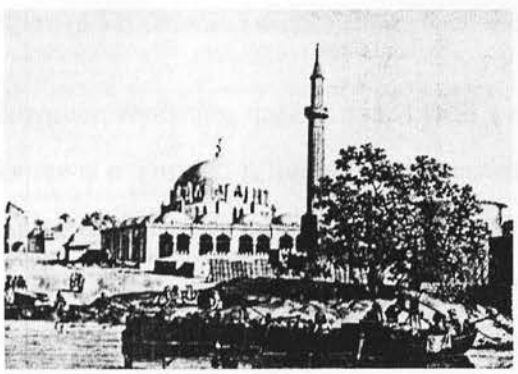
These stresses provoked the Cairene people to revolt against such suppression. These revolts were led by Al-Azhar *ulama* demanding an immediate stop to all kinds of oppression and the instatement of an adequate rule according to Islamic legitimacy. Throughout these revolts people fortified themselves in the mosques especially the mosques of Ibn-Tulun and Sultan Hassan (Ibrahim, 1999). One may interpret this as self-regulating of the mosque structure. In spite of the efforts undertaken by Mumluks and even their predecessors to marginalise its political role, it at once regained it under political pressure.

The Ottomans were determined to secure the subordination of Cairo to Constantinople in all political, educational, cultural and architectural means. They ignored the Arabic language and the prime factor saving the Arabic language from complete disappearance was that it was the language of the Holy Quran and Prophet's Hadith. This encouraged

Al-Azhar *ulama* to protect it and promote its learning. Al-Azhar was the only institution for teaching religious and secular sciences, that is with the exception of the *katatib* (pl. of *kuttab*) where children recited the Holy Quran, and learned the principles of reading, writing, and mathematics. Institutes and schools established during the Mamluks reign were closed. Except for the library of Al-Azhar, the same fate befell the country's libraries (Ibrahim, 1999).

This caused serious deterioration in the scientific status of Egypt, reaching its lowest levels of deterioration at the end of the Ottoman rule. In the same time, ethical and moral status also greatly declined, particularly among the ruling strata. The Sufi systems spread in Cairo and other Egyptian cities, becoming the only source propagating moral and religious knowledge (Ibrahim, 1999).

Architecturally, Egypt became extremely influenced by Turkish designs **(Figure 5-31)**. A major reason for the decline of decorative features in this period relates to Sultan Silim sending all skilled labour to Turkey to enrich the Turkish architectural movement. This left Egypt bare of architectural creativity, until Sultan Sulaiman Ibn Silim allowed some of the skilled Egyptian labour to return. This is when Ottoman architecture, influenced by Byzantine architecture, appeared in Egypt, especially in mosques. This can be seen, for example, in the use of semi-domes and pointed minarets.



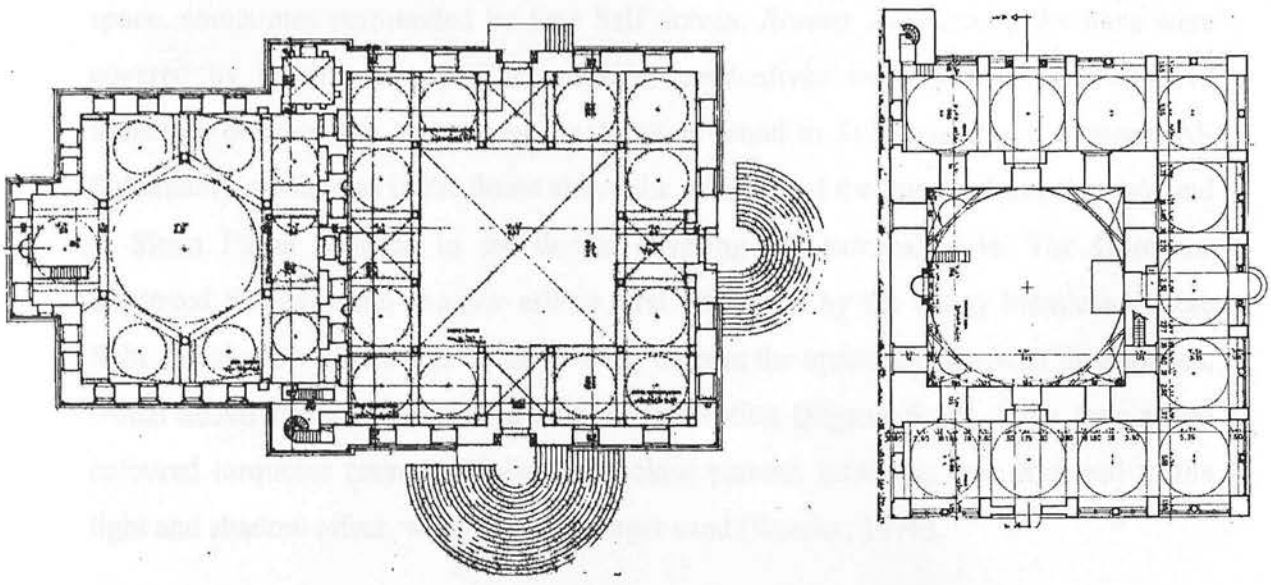
The Port of Bulaq and the Mosque of Sinan Pasha. Source (Abu-Lughod, 1971).

The Madrasa Mosque of Mohamed Bey Abu Al-Dahab. Source (Abouseif, 1998).

Figure (5-31) Examples of the Turkish influence on Cairene mosques.

Under the Ottomans, there were two main design typologies for the mosque. The first was a continuation of the previous line, which had a central courtyard surrounded by

four *riwaqs*, one of which was the main prayer area, as in the Mosque of Queen Safeyya. The second design concept was based on the centrality of the prayer hall with no courtyards, but a *riwaq* around or behind it, with the *Quibla* wall incorporating a *minbar* and a *miharb*, as seen in the Mosque of Sinan Pasha. The concept maintained symmetry and balance in the plan and the internal design. These design typologies are shown in **(Figure 5-32)** below.



Plan of Queen Safeyya Mosque. Source (Ibrahim and Mostafa, 1992).

Plan of Sinan Pasha Mosque. Source (Ibrahim and Mostafa, 1992).

Figure (5-32) Ottoman mosques' design typologies.

However, replacing the courtyard with a central prayer hall covered by domes and semi-domes is a Turkish influence. It is known that some areas in Turkey are harshly cold in winter (different from Egypt). This made the courtyard pattern inappropriate for such weather. This pattern has been transferred without understanding its deep structure, which is thought to be a major transformation in the genetic structure of the Cairene mosques.

Compared to Mamluk minarets, the Ottomans' were easier, cheaper, and needed less time and talent to be erected **(Figure 5-33)**. Generally, they consisted of a square base, followed by a facetted circular shaft, with a single balcony, having a conical top, such as the minaret of Queen Safiyya mosque. Most of the later Ottoman minarets followed the style of Istanbul (Abouseif, 1985). With regard to the number of minarets, the Ottomans

applied a crucial condition that is only Sultans are allowed to build more than one minaret in their mosques[19] (Hillenbrand, 1985). Ottoman minarets were located at the corner of the prayer area, as in the minaret of the Mosque of Sinan Pasha (Abo Bakr, 1989). The discussion, at this point, suggests that using the minaret to signify the builder Sultans is an obvious misuse of the meanings which the minarets initially symbolised.

Domes and half domes were extensively used, with a large dome covering the main space, sometimes surrounded by four half domes. *Riwaqs* surrounding the nave were covered by smaller domes. The spherical pendentives were used as a method of transition between the square and the dome as found in Sulaiman Pasha Mosque, Al-Sulaimaniyya Madrasa in the dome above the *mihrab* and the domes above the aisle and at Sinan Pasha Mosque in the domes covering the external aisle. The Ottomans improved the light and shadow effects first attempted by the Burgi Mamluks. These light and shadow effects can be particularly seen in the opening patterns of their domes, which added further interior and exterior decoration **(Figure 5-34)**. Later they added coloured turquoise ceramic knobs. The colour pattern, however, was preferred to the light and shadow effect, which was no longer used (Kessler, 1976).

Externally, the façade depended on the articulation of elements. The main entrance was raised out of the wall surface to be emphasised. One can distinguish between different spaces from the façade such as the residential space, the commercial, the *sabil* and the *kuttab*, keeping the mosque recognisable from it. The general theme of the façade was to emphasise horizontality instead of verticality by the use of the ornamental friezes and the band of floral decoration. The facade was also known for the combination it had between the Mamluks vocabulary (like coloured altered courses, for example) and Ottoman details that were partially influenced by Rococo art, such as the bronze grills in the openings, as in the facades of Sultan Mahmud Madrasa **(Figure 5-35)**. The use of crestings was considerably reduced in the late Ottoman and Mohamed Ali periods.

Figure (5-33) The minaret of the Mosque of Queen Safiyya. Source (Ibrahim and Mostafa, 1992).

[19] Mostly two minarets, although many of the imperial Mosques erected four minarets in order to mark the perimeter of the mosque as a building (Ibrahim, 1999).

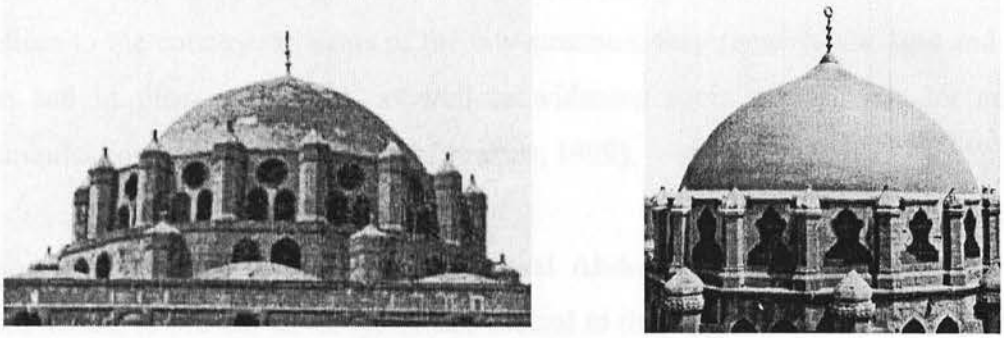


Figure (5-34) The Ottoman dome. (Left) The dome of Mohamed Bey Abo Al-Dahab Mosque. (Right) The dome of Sinan Pasha Mosque. Source (Ibrahim & Mostafa, 1992).

Internally, the use of domes, circular arches, columns, windows and room doors created a kind of harmony, as well as an equilibrium in the plan. The most characteristic Ottoman influence was the introduction of colours to the interior of the mosque, particularly in the domes, window-lintels and sills. Coloured courses were often used in internal walls too, containing few ornaments, inscribed bands and floral patterns.

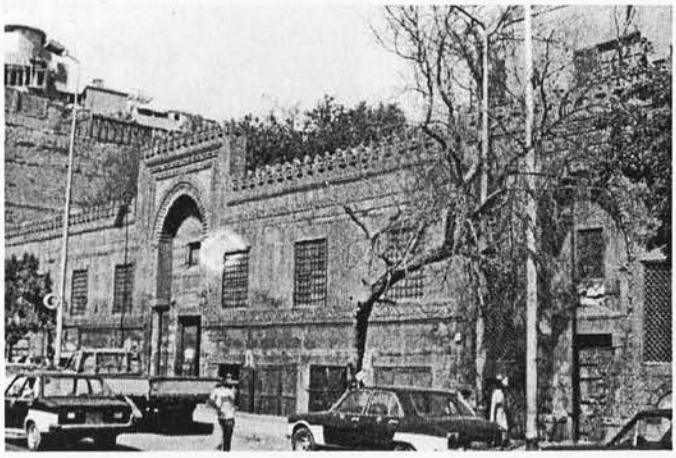


Figure (5-35) The façade of the Madrasa of Al-Sultan Mahmoud. Source (Ibrahim & Mostafa, 1992).

Eventually, Cairo deteriorated greatly and steadily after the Turkish conquest until the French expedition. This was due to poverty, Pashas misrule, and repeated revolts (Ibrahim, 1999).

The Ottomans restrictive policies against the Egyptians, and foreigners living in Egypt, including the French merchants, prompted Napoleon Bonaparte to invade Egypt (1798-1801 AD). Thus, this was the announced reason justified by him, though his actual goal

was to strike against the British, who arrived to Egypt earlier (Abu-Lughod, 1971).

The French introduced many innovative governmental, cultural, scientific, and urban practices to the country. In terms of the city structure, they removed the lane and street gates and lit them over night, as well as widening some major roads for military communication and control purposes (Ibrahim, 1999).

During their expedition, the French occupied Al-Azhar and lodged their troops and horses inside, to present an image of full control to the Egyptian people. This provoked Egyptian resistance, that met with the interests of the Turks and British, and ended in a French withdrawal in (1801 AD) (Margoliouth, 1907).

5.2.10 Mohamed Ali's Era (1805-1848 AD)

The Macedonian officer Mohamed Ali was appointed as a Pasha. Mohamed Ali later made Egypt a self-governing state, ending the Mamluk - Ottoman struggle. Mohamed Ali was known for his knowledge, openness to European development programs, and his efforts to apply these developments, and he is considered as the founder of modern Egypt (Margoliouth, 1907).

One of Mohamed Ali's priorities was to remodel the army and built a strong navy. The first Egyptian corvette was prepared in (1810 AD), followed by many others, till a strong naval force was ready for war (Amhrest, 1906). Moreover, he promoted scientific discovery and did his best to develop the hospitals. In (1836 AD), a great school of medicine (Qasr Al-Ayni) was established (Abu-Lughod, 1971).

Mohamed Ali invited foreign talents to Cairo and built a modern city, in the European style. However, this was considered alien to Cairo's character and tradition. In addition, Mohamed Ali extended Cairo to the Northwest and changed it into a grand city for Europeans. Cairo experienced a significant change when Mohamed Ali imported the first carriage in (1824 AD), requiring that the streets be widened. Sixteen years later he imported about thirty more carriages (Antoniou, 1998).

The most important example of this era is the mosque of Mohamed Ali himself. It is

considered as a continuation to the Ottoman style known for its extreme luxury, especially at the level of its gilded decorations and coloured marble claddings. Also the internal height exaggeration generates a feeling of strength. However, such architectural extravagance and luxury does not correlate with Islamic concept of simplicity.

The prayer hall basically consisted of a square area having four huge central piers supporting four semi circular arches upon which the central large dome is mounted. This is surrounded by four half domes in addition to four small domes in the corners. An *iwan* covered by a half dome leads to this square area from the Southeast side. The prayer hall had three entrances from all sides but the *Quibla* side. These entrances were emphasised by increasing the span of the arch of the *riwaq* in front of them. Two *riwaqs,* covered by shallow domes, can be found adjacent to the prayer hall, perpendicular to the *Quibla* wall. The tomb was located at the west corner of the prayer hall surrounded by a bronze screen filled with several patterns of decorations.

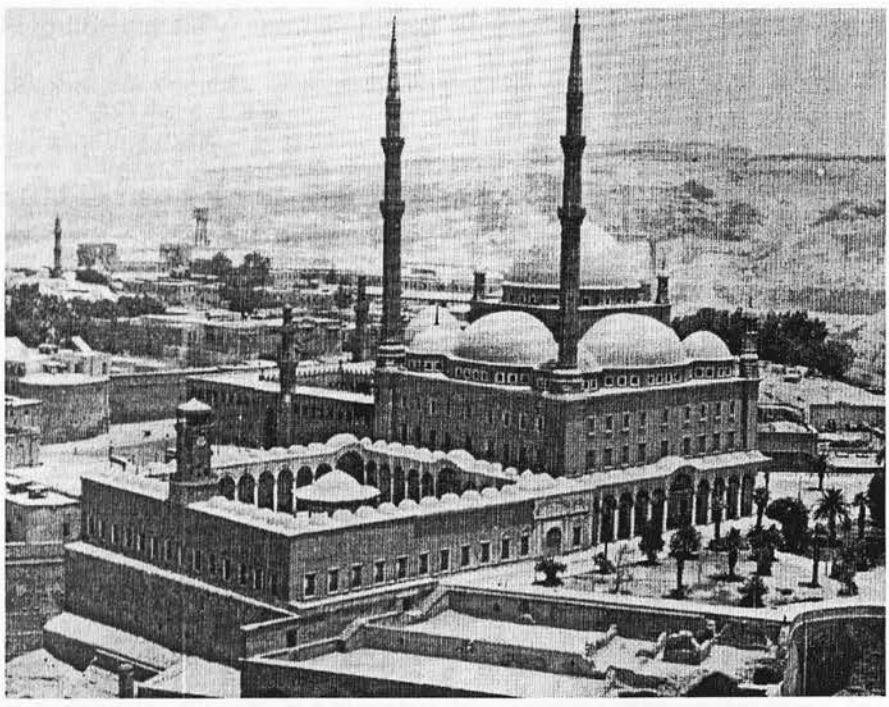


Figure (5-36) Mohamed Ali's mosque with the open *haram* and covered prayer hall. Source (Abouseif, 1998).

Preceding the prayer hall was a central courtyard surrounded by four *riwaqs* covered by shallow domes. It had an octagonal fountain in the centre encircled by another dome. This dome was supported on eight columns, topped by circular arches, and crowned by a wooden projecting roof.

Internally, there was also a gradual heightening treatment, with half-domes being used on the axes of the prayers hall. Small domes at the corners also created a gradual upward transition from the ground to the central dome. Decorations and ornaments were used extensively, and were coloured and gilded, Baroque and Rococo. This did not match with the meaning of the mosque. Externally, the appearance of the façade was dependent upon the function of the space behind.

It is obvious that the minarets had no relation to the entrances, being located at the two corners of the prayer hall, emphasising the axialty and symmetry along the main axis passing by the *mihrab*. The minarets were pointed and had a very thin section (pencil shaped). It had two balconies, intersecting the height of the minaret, and supported on rows of stalactites. The minarets terminated with a pointed conical top (Galal, 1983).

In (1841 AD), in line with to the conditions of the peace agreement Mohamed Ali signed with the Sultan and his European supporters, the rule of Egypt was kept in Mohamed Ali Pasha's family. In (1848 AD), Mohamed Ali died and was laid in his mosque in the Citadel (Margoliouth, 1907).

5.2.11 *Khedives* Era (1848-1952 AD)

This section of the thesis discusses the period from the rule of Mohamed Ali's descendants (the Alaweyyid family), starting by his son Ibrahim in (1848 AD), until the 'Free Officers' revolution of (1952 AD).

Ibrahim died shortly thereafter to be succeeded by Abbas Helmi I (1848-1854 AD) the eldest grandson, and then Sa'id (1854-1863 AD). Ismail[20] started his rule in (1863 AD). He had great desires to extend and develop his country. He made some incorrect financial judgements, resulting in the taking out of loans from Europe, which raised Egypt's national debts considerably. This opened the way for foreign intervention, which ended with imposed British / French Dual Control of Egypt's financial matters, put in place to protect their investments. Eventually, they forced Ismail to resign to his son Tawfiq in the year (1879 AD). Abbas Helmi II (1892-1914 AD) succeeded his father

[20] He was the first to be named '*Khedive*'. The title '*Khedive*' means viceroy in Turkish (Fiki, 1997).

Khedive Tawfiq. During his reign the British[21] gave him a hard time, forcefully dominating the country and interfering in all the countries affairs. By the time of World War I (1914 AD), Abbas did not co-operate with the British, and was replaced by the short-lived Hussein Kamel. When Kamel died in (1917 AD), he was succeeded by his brother Prince Ahmed Fouad. Fouad achieved full independence from Turkey and ruled Egypt till his death in (1936 AD), leaving the throne to his son Farouk (Abu-Lughod, 1971).

Ismail had great desires to extend and develop his country, and during his rule the cultural movement was rich. He had so many contemporary scholars such as Ali Mubarak, Refa'a Al-Tahtawi, Gamal Al-Din Al-Afghani, and Mohamed Abdo, who contributed to the cultural development of Egypt (Ibrahim, 1999). During this time the Opera House was also completed (Abu-Lughod, 1971).

Ismail's plan for developing Cairo was based on making Cairo a European city. Turning his back to the traditional Islamic city, which was symbolised by transferring the authority from the citadel to Abdin palace (Ibrahim, S. 1984). This made a clear statement, dissociating the ruler from the mosque creating a fully secular rule.

To develop Egypt, Ismail constructed hundreds of bridges across the Nile, the best known was 'Qasr Al-Nil' in Cairo. He dedicated special attention to communication, as he set up telegraph lines and improved the railway, and declared the opening of Suez Canal in an international ceremony after its completion. For this occasion, in (1865 AD) Ismail established more palaces for his European visitors, widened streets, built a number of European neighbourhoods, and established two companies to provide Cairo with water and gas (Abu-Lughod, 1971).

Ismail did not realise any major achievements in terms of the building of new mosques, employing the same *riwaq* typology used by his predecessors in most cases. The elevation was very simple with more classical openings and decorative blinds of Mamluk ornamentation (El-Hamamsy, 1992). Most of his contributions were in the

[21] Egypt was occupied in (1882 AD), became a protectorate by World War I in (1914 AD) and get her (partial) independence in (1922 AD) under the pressure of Al-Wafd and eventually got her complete independence in (1956 AD).

maintenance, restoration and enlargement of old mosques, such as the restoration and enlargement of Al-Mashhad Al-Husseini (Ibrahim, 1999).

Tawfiq followed in his father's (Ismail) steps in the maintenance and preservation of old mosques. He restored Al-Imam Al-Shafi'i Mosque, and founded the Committee for the preservation of Arabic monuments in (1881 AD). The duties of this Committee included the recording of Islamic monuments in Egypt and the supervision of their maintenance and restoration (Ibrahim, 1999).

In terms of mosque architecture, it is assumed that Abbas Helmi II returned to the elegant Mamluk typology with ornamented elements and decorated elevations. It is known that the Mamluk style originated and flourished in Egypt. Thus, reviving this style was motivated by a desire to emphasise the expression of the Egyptian identity in resistance to colonial influences. Yet, the deeper meaning of such a revival was a message of independence and self-control.

The free-standing mosque was highly admired during the Khedives era as a result of European influence, and was characterised by wide plazas and public spaces. This lead to the separation of buildings from their surroundings, hence, it could be argued that the mosque was seen as a free-standing three-dimensional entity or a sculpture, as can be seen, for example, with Al-Rifa'i[22] Mosque. **This is another shift in the transformation of the mosque, becoming an object for people to look at, rather than an influential part of their lives.**

Al-Rifa'i mosque sought symmetry and monumentality in its design. The elements and decorative motifs were elegant to compete with the neighbouring Madrasa Al-Sultan Hassan. Only its large size and free-standing nature establish it as a shift from the medieval integral mosque. In this sense Al-Rifa'i could be regarded as a transition between the medieval mosque, built within a dense urban pattern, and the works of the nineteen twenties, which were distinguished by their modern urban forms (Sedky, 1998).

[22] This is one of the most important mosques in the twentieth century. It was initiated by the mother of Khedive Ismail in (1869 AD), but stopped due to her death, then resumed by Abbas Helmi II. It was opened for prayer in (1912 AD) (Ibrahim, 1999).

By the end of the nineteenth century, Cairo had two distinct, and more or less independent, sub-cities; the old original city being left as it was, with a new European-style city to the west (Abu-Lughod, 1971).

Since Khedive Ismail's reign, many European experts have been invited to work for the Royal Family. In terms of architecture, Mario Rossi, an Italian architect (1897-1961 AD) designed many mosques in Cairo, Alexandria and Assiut, such as Al-Zamalek Mosque, and Omar Makram Mosque in Cairo. The general character of his architecture was a combination between the Ottoman and Mamluk styles, with some innovations. Mosques were often raised above street level, with no courtyard, due to the scarcity of large plots in the town centre. New forms of arabesque (*tawrique)* decoration were developed, carved stone domes were placed in the corners of mosques in addition to the main central dome. And finally, the exaggerated form and height of the minaret continued as in the Ottoman mosques (Sedky, 1998).

A new innovative phase, matching the modern era, was marked by the use of modern construction materials like reinforced concrete, and aimed to harmonise the mosque with its surroundings, and employ the minaret as the landmark (Abdel Gawad, 1950). In structural terms, this can be seen as turning the mosque from a super-ordinate structure in the city, to a sub-ordinate one.

The construction and development of Cairo almost stopped during and between the two World Wars. Just a few alterations occurred in Cairo. Its streets and squares were almost unchanged from the nineteenth century, with the addition of a small number of buildings and Palaces in the European style. Few new streets were created. Construction of mosques in this period was limited to the maintenance and preservation of old mosques (Ibrahim, 1999).

King Farouk's inexperienced practices, and the British occupation, drew the country towards further poverty, illiteracy and disease. This, together with the weapons' crisis of the Palestine war[23], prompted the army officers' revolution of (1952 AD), which

[23] In (1948 AD), Egypt rejected the UN project of dividing Palestine. Hence, Egyptian army fought with Arab troops against Israel. In this war, the Egyptian army was supplied by defected weapons, what turned

dethroned Farouk, and ended the British occupation.

5.2.12 Republican Era

This period started with the revolution and the rule of Mohamed Nagib, as the President of the first republic (1953-1954 AD), passing by the reigns of Gamal Abdel Nasser (1954-1970 AD), Anwar Al-Sadat (1970-1981AD) and eventually the current President Hosni Mubarak.

The Revolution adopted a socialist model that aimed to terminate all colonial controls, put an end to all sorts of monopolies, set up a system of true social justice, improve the strength of the army, and finally set up reliable democracy. To achieve these goals, the Revolutionary Command Council initiated the agrarian reform policy, nationalised large projects and industries, launched public health schemes, introduced pensions for the elderly, brought in unemployment insurance, and legislated the representation of the previously oppressed labour and peasant strata in the Parliament and nationalised company boards (Fiki, 1997).

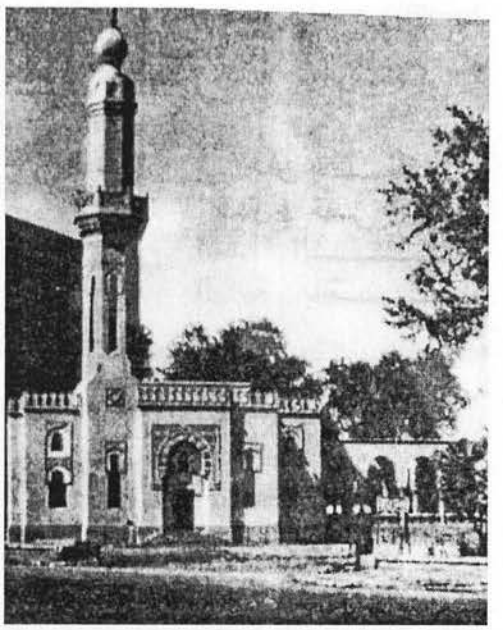


Figure (5-37) Al-Dokki Mosque, built after the revolution. Source (Ibrahim, 1999).

The Revolution Command Council knew that religion was an extremely influential parameter in the life and thinking of most Egyptians, and used it to gather further public support against the former colonial and corrupt regime. This led to the creation of the Supreme Islamic Council, the launch of the Holy Quran radio station, the introduction of some improvements to Al-Azhar, and changes the curriculum of basic education to establish religion as an obligatory subject (Al-Awad, 1997). Furthermore, Al-Awqaf[24] established a number of mosques, such as those in Rawda, and Dokki **(Figure 5-37)** (Ibrahim, 1999). However, building mosques turned to be a 'state' duty, instead of a

into a scandal that affected the King's situation (Ibrahim, 1999).

[24]Al-Awqaf is an organisation responsible for constructing Islamic buildings, mosques and charity foundations.

ruler's achievement or pride.

Additionally, during the reign of Nasser the Egyptian government sought to bring the mosque under government control and to institionalise a reformist interpretation of Islam, that is, one more suitable to their socialist regime (Tibi, 1991). This clearly turns the mosque into a sub-ordinate structure within the super-ordinate socialist theme brought by the revolution.

Thus, in Egypt the trend was for Islam to be politically neutralised or diffused. Endeavours were undertaken to impose the secular character on religious institutions. Furthermore, Al-Azhar was made directly subordinate to the office of the president in (1961 AD). Additional secular faculties of medicine, engineering, agricultural science, and economics were opened in Al-Azhar University. It thereby lost its exclusively religious character, although it is still the most authoritative seat of learning Quran, Sunnah, *Sharia*, *Fiqh* and other branches of religious sciences for all Sunni Muslims, as the Sheikh-Al-Azhar (the rector) is the highest authority in *fatwas* (legal opinions) (Tibi, 1991).

In spite of such a tendency to suppress its role, the mosque sustained its position, maintaining its self-regulative nature. When Nasser sought to address the people, after the Trio-strike[25] on Suez in (1956 AD), he chose the *minber* of the mosque, knowing its spiritual inspirations to the people and the important place it occupied in their minds and hearts.

Driven by his pro-Arabism ideologies, Nasser sent Egyptian troops to participate in Yemen's Civil War, in which Egypt suffered serious military and economic losses. This affected Egypt's military abilities, and was one of the major causes behind the dramatic military failure in the Six-Day War against Israel in 1967[26] (Wassef, 1983).

This defeat raised an important legitimacy crisis in all Arab countries, weakening

[25] Egypt had weapon supply agreements with East-European countries. America reacted to this by withdrawing its promised fund to Aswan's High Dam Project. Nasser responded by nationalising Suez Canal to provide the needed funds. Britain, France and Israel allied to regain control of the Canal by force in this trio-strike of (1956 AD).

[26] The war ended to the Israelis occupying Sinai Peninsula from Egypt, Golan Heights of Syria, and some

secular ideologies (nationalism, socialism, liberalism) and creating a suitable atmosphere in which to revive Islam (Tibi, 1991). By then, this revival was met with severe suppression in Egypt, and all Muslim activists were prisoned. The intelligence services captured anyone who was even suspected of having any contacts to the activists. This frightened people from being involved in any Islamic foundations, which even included going to the mosque on any day other than on Fridays.

When President Sadat took over, he faced serious problems from the supporters of the past socialist regime, which he thought might only be beaten by strengthening the movement towards Islam. When campaigning for his 1973 war[27] against Israel, intended to retrieve the occupied territories, he emphasised the religious aspects of fighting to encourage people to participate. Mosques played an important role in preparing people's minds for the war, in spite of this tricky policy[28] he undertook to mislead the Israeli army. Even during the war, the mosques had a significant role in spreading moral and spiritual support and helping the people in need.

After triumphing in the war, President Sadat introduced an economic policy to encourage private and foreign investment. This was known as the 'open door policy'. This policy had some negative social setbacks, like having the language of money dominate Egyptian life, problems of inequality, and huge salary-differences between governmental and private sector employees. Additionally, an economic shift was reported as the richest 5% increased their share of national income from 15-20%, while the poorest 20% share fell from 17% to 13% (Ibrahim, S. 1984).

Bolstered by his victory in (1973 AD), President Sadat announced his visit to Israel in (1977 AD) to launch peace talks under American auspices, which ended in the famous Camp David agreement of (1978 AD) followed by the Washington Peace Treaty in (1979 AD). However, apart from Sudan and Oman, all Arab countries did not accept the

parts of Jordan (Gamassi, 1998).

[27] In 6th of October (1973 AD), Sadat initiated a military strike against Israel to restore his territories back. The Egyptian forces, crossed Suez Canal, broke 'Barlaif line' (a defensive sand barrier built by Israel on the East Bank of Suez Canal) using water pumps and successfully retrieved large areas of Sinai and was a source of pride to the Egyptian people (Gamassi, 1998).

[28] e.g. 1. Announcing Omra tours for a vast number of the army officers in the daily papers, which were false tours, 2. Announcing a formal visit of the Romanian Secretary of Defence on 8th October, which was cancelled when the war started. 3. Collecting and dismissing the reserve troops several times as well as announcing several false dates for that war (Baha' El-Din, 1974).

new agreement and suspended diplomatic relations with Egypt. The same rejection was expressed by many political streams in Egypt, including the Islamic movements. This internal tension prompted Sadat to arrest huge numbers of activists. This turned them against him and ended in his assassination in a military parade at Cairo in (1981 AD). Sadat was succeeded by the current President, Mohamed Hosni Mubarak (Wassef, 1983).

The above crisis resulted from the actions of some 'initially' Islamic movements being misled by narrow-minded extremist leaders. These extremist ideas even contradicted sound Islamic principles, but were never filtered or corrected due to the absence of the mosque's role.

From the above discussion, one may induce that the present Muslim society of Cairo has been affected by a number of factors, which shaped its current environment. First, the influence of the Western colonisation on Muslim countries brought different ideologies, socio-cultural structures, and physical patterns to the cities. Second, the city designers and other professionals involved share responsibility with the decision-makers, because they actualised the foreign ideologies in the built form, disregarding the structure of the Muslim city. Finally, the most important aspect is the conflict between the socio-cultural aspects of Muslim society and their present built environment, which makes it harder to integrate Islamic beliefs into daily life.

As for the architecture of the mosque, it is generally realised that the majority of contemporary mosques continued to be erected as free-standing buildings. This was discussed earlier, in the previous section, as a physical dissociation of the mosque from the city's urban fabric. However, the present study analysed a number of Cairene contemporary mosques, and could classify them into three broad trends.

The first trend uses classical Islamic architectural elements, forms and patterns with the addition of some modern services, materials and structural systems (reinforced concrete, beams, columns ...etc.), similarly, their decoration depended on traditional decorative work and calligraphy. The minarets alter between the Mamluk and the Ottoman styles, especially the Burgi Mamluk, which was a basic source of inspiration. Examples of such

mosques are Salah El-Din Mosque, Sayyida Safeyya Mosque, the Mosque of Heliopoles Sporting Club, Al-Fath Mosque in Ramsis Square, Al-Noor Mosque in Abbaseyya district and Genina Mall Mosque in Nasr-City district **(Figure 5-38)**. In brief, the mosques of this category are modern in their structure but conservative in their vocabulary.

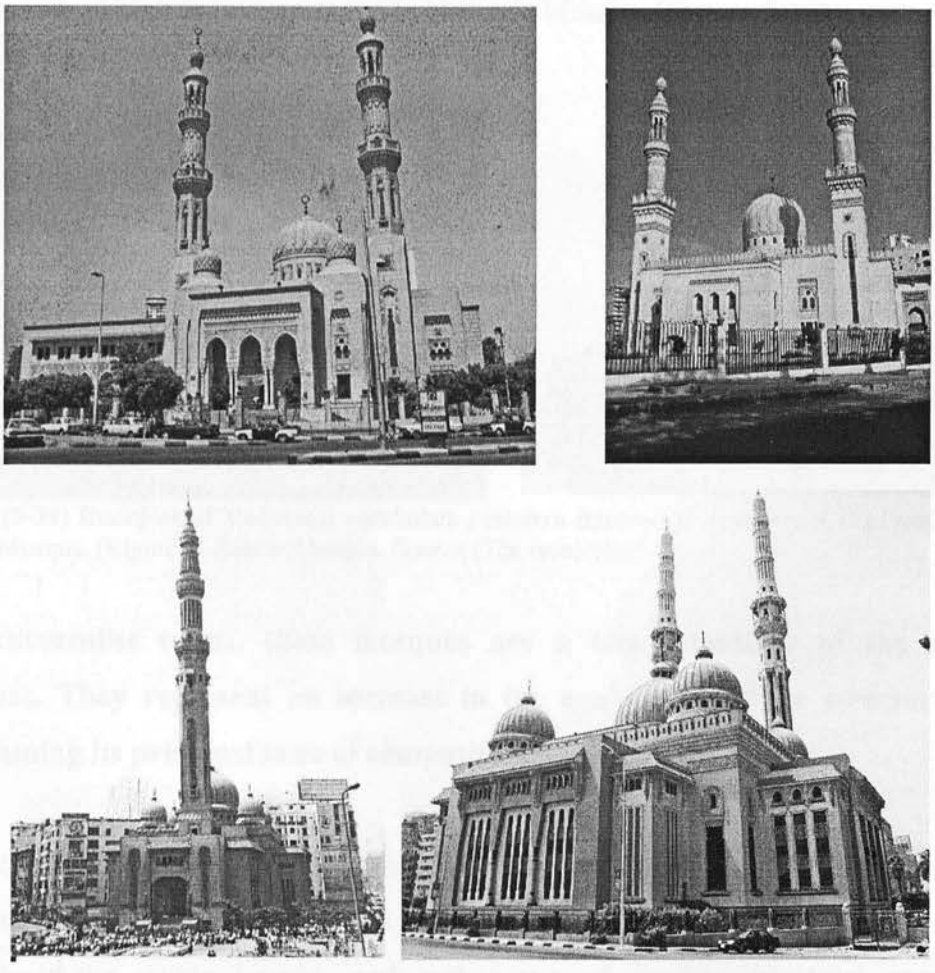


Figure (5-38) Examples of 'modern structure / conservative vocabulary' mosques (Upper Left) Salah El-Din Mosque. (Upper Right) Genina Mall Mosque. (Lower Left) Al-Fat'h Mosque. (Lower Right) Al-Noor Mosque. Source (The researcher).

In the field survey, people expressed considerable appreciation to this type of mosque. This is due to their higher aesthetic value, as well as provoking nostalgic memories of Muslims' victorious times. This will be discussed in chapter six.

The second category employs a number of traditional architectural elements, but in a modern framework. This modern framework includes (in addition to structural system, services and materials) the new composition and re-shaping of these traditional

elements. For example, minarets start to take non-traditional forms, as in Nasser's Mosque and Al-Zahra Mosque at the campus of Al-Azhar University in Nasr-city district **(Figure 5-39)**. Domes tend towards further simplicity. They are mostly concrete, sometimes having a new form called *Shokhsheikh,* which exists as a square or an octagon and is centrally located in most cases. The facade sometimes has niches or shallow recesses, shaped as pointed or keel arches, which may be covered by grills of lattice work as high as two stories as in Nasser's Mosque **(Figure 5-39)**.

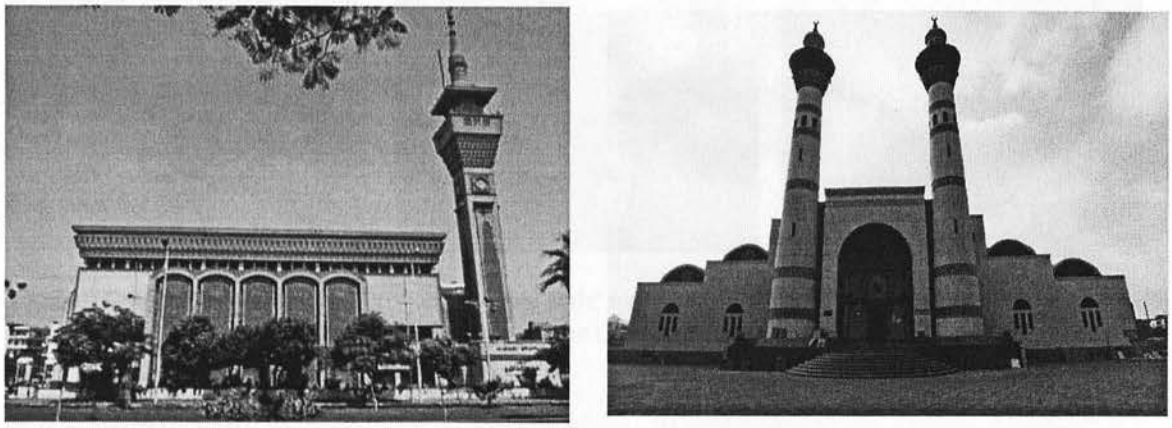


Figure (5-39) Examples of 'traditional vocabulary / modern framework' mosques. (Left) Gamal Abd El-Nasser Mosque. (Right) Al-Zahraa Mosque. Source (The researcher).

In structuralist terms, these mosques are a transformation of the previous mosques. They represent an increase in the complexity of the structure, while maintaining its principal laws of composition.

Finally, the modern typology, which is inspired by international styles and vocabulary, is characterised by abstract forms and streamlined geometry (e.g. one section minarets throughout the whole length), and makes use of modern structural construction techniques, services, and materials. They do not necessarily attempt to achieve a specific local architectural identity. They are perhaps more innovative than the previous two typologies. This typology is seen in the Aal Rashdan Mosque of the armed forces, Aal Thani Mosque in Haram district, Al-Rahma Mosque and Enppi Headquarters Mosque in Nasr City district and the Mosque of Al-Said club in Dokki district. See **(Figure 5-40)**.

In that their modernist creed aims at presenting something 'new', something that does not relate to the traditional or old designs, this obviously represents a 'change' rather than an 'evolution'. Many people did not have the same perceptions of these mosques as

they did with the other mosques.

Figure (5-40) Examples of ' modern international style' mosques. (Left) Aal Thani Mosque. (Middle) Al-Rahma Mosque. (Right) Al-Said Club Mosque. Source (The researcher).

5.3 Conclusion

Although this chapter does not present a complete historical trace of Cairo, it introduces a summary of the most significant events that occurred throughout its history, in order to familiarise the reader with the background to the area of the study.

The chapter started with a study of the Prophet's mosque in Al-Madina. Then, discussed the historical transformation of the Cairene mosque, arranged into periods starting with the first settlement when Amr Ibn Al-A'as first came to Egypt, followed by the Ummayyid and the Abbasid; Tulunid and Ikhshid; the Fatimid; the Ayyubid; both Mamluks; the Ottoman and Mohamed Ali's regimes. It also includes sections about the Khedives era starting by Ibrahim and ending by Farouk and, finally, the regime of the new republic which started with the revolution, then the rule of Mohamed Nagib, Gamal Abdel Nasser, Anwar Al-Sadat and eventually the current President Hosni Mubarak.

1. Socio-political Transformation

After building the Prophet's mosque in Al-Madina, he constructed his house (this became a tradition in later Islamic cities with the house of the Caliph or the city's governor), attached to the East Side of the mosque, which facilitated flexible

communication between the governing authority and the public.

When the Abbasids began appointing Turk governors to Egypt, these Turk rulers did not consider their religious role, and rarely led the prayers, and basically focused on administrative and political issues. The partial move of the social and political role from the mosque to the governor palaces was a turning point in the deep structure of the mosque, symbolising the separation between religion and politics.

Similarly during the Fatimid dynasty, authority was moved to luxurious palaces, which were dissociated from people's life, both physically and subjectively. This transformation in the role of the mosque continued in the following eras. Additionally, it was noticed that during this era the mosque began to be used for the propagation of state ideologies and policies, i.e. the mosque was led by the rulers rather than the mosque determining and leading their policy and that of the state.

The early Ayyubid plan was to secure Cairo by constructing a citadel and defensive walls. This citadel dominated the city structure and was a fortress for troops, a centre of government and a residence for the ruler. This implied that the political and military dimensions lead the city planning scheme towards a defensive structure, instead of the open sociable pattern characterised by the central mosque of earlier reigns. The Mamluk orientation was to keep the authority for themselves, enlarging the gap between them and the public.

Ottoman suppression prompted the Cairene citizens to revolt. These revolts were led by Al-Azhar *ulama* demanding an immediate stop to all kinds of oppression and implement Islamic rules. Throughout these revolts people fortified themselves inside the mosques. One may construe this as a sort of self-regulation of the mosque structure. In spite of attempts undertaken by the Mamluks and even their predecessors, to marginalise its political role, it retained it at once under this political pressure.

Starting from French Expedition, the rulers of the country switched their efforts to European patterns of development, which do not relate to mosques. In more recent periods, secularism, as discussed earlier in this research, became the overwhelming

ideology mainly followed by both people and authorities and applied to their way of life. The spread of secularism throughout Muslim society led to a different perception of the mosque. The mosque was no longer the vital element in the people's lives.

In the post-revolution years the State established a large number of mosques. This implies that The building of mosques became a 'state' duty, rather than a ruler's achievement or pride.

Additionally, during Nasser's reign the Egyptian government sought to bring the mosque under government control and to institutionalise a reformist interpretation of Islam suitable to their socialist regime. Thus, all Muslim activists and anyone who was suspected to have contacts with them, were prisoned. This worried people from attending the mosque other than on Fridays. However, the mosque maintained its position, when Nasser addressed the Egyptian people after the Trio-strike on Suez (1956 AD), from the *minber* of the mosque, knowing its spiritual influences upon people and the place it occupies in their minds and hearts.

2. Rulers' Commemoration

Some historians place responsibility for this trend on the Umayyid rulers. Minarets were finely carved with Quranic texts as well as the Caliph's name and construction date. These inscription bands were firstly placed at a legible height to have the ruler's name clearly readable and commemorated. Afterwards, such bands were located at an illegible height just for decoration. Another act of commemoration names was the tradition of combining their tombs within the mosques they founded.

Mamluks also wished to commemorate themselves as did the Fatimids during their rule, and after death. This is exemplified in the mausoleums they attached to mosques, and the large sums of money they spent to decorate their mosques and tombs. In this way their names would be associated with extraordinary monuments, suggesting their faithfulness and piety.

The Ottomans legislated a law that allowed only Sultans to build more than one minaret in their mosques. This emphasised the role of the founder rather than the significance of

the building. Mosques in this category are in effect symbolic statements of power rather than of piety, with a subsidiary role of worship.

3. Urban Structure

By understanding the Islamic belief and examining the traditional Muslim city one finds that the relationship of the mosque to the built environment was extremely strong in earlier dynasties. The conceptual meaning of this relationship in people's minds, within the traditional Muslim City, was clear and fully understood. This also includes the Muslim authorities, decision-makers, and all sectors of society, which emphasises the presence of the mosque and its vital role in people's perception. This, in turn, was translated in the Muslims' physical environment, giving the mosque a position at the heart of the city, occupying its physical centre. The contemporary Muslim City is found to have taken a different dimension. The role of the mosque has changed and its conceptual meaning has been completely replaced by another, based on foreign ideologies introduced to Muslim society.

Al-Qahira had the palace of the Fatimid Caliph at its centre, instead of the mosque. The Royal nature of Al-Qahira was manifested in many luxurious aspects, such as the palace's huge area, the horse-riding grounds, the royal parks, and the open spaces identifying the palace within the city structure. This is considered as a turning point to the role of the mosque in regard to the spatial structure of the Muslim City. This also influenced the role of the mosque in society. It was no more the centre of political and religious power, which had been transferred to the palace, and the mosque was situated elsewhere rather than in the centre.

The external walls of the mosque were aligned with the directions of the streets. This is an urban representation of the same political conception, forcing the mosque to follow rather than being followed. The Fatimids then built the first wall around Cairo. In previous eras, rulers did not need walls and castles, they were secured because the mosque and the ruling system were already integrated into their lives. Thus, such walls can be seen as replacing some of the roles of the mosque.

The free-standing mosque was appreciated in the second half of the nineteenth century

as a result of European influence, characterised by the use of wide public spaces and plazas. This introduced the separation of buildings from their surroundings, therefore, it is suggested that the mosque was seen as a free-standing three-dimensional entity or a sculpture, unlike its original embodiment playing an integral part in people's lives.

4. Design Typology

Obviously, the Prophet's mosque does not contain a full genetic image of all mosques. But it is the point where they started their evolution, emerging in its simplest form, but having the potential to move with the process of transformation. Thus, the simplicity of the Prophet's mosque is the embodiment of all the potential to develop into a more sophisticated structure, to cope with the evolution and complexity of society. Behind its surface structure, represented by the building, components, organisation of spaces, etc. was a deeper structure, exemplified in the roles the mosque performed in response to both spiritual and secular domains.

The *riwaq* plan was first introduced in Egypt. It consists of four covered areas *(riwaqs)*, surrounding a courtyard, the deepest of which is the one in the *Quibla* direction.

Fatimids developed the suspended mosque design, responding to their commercial interests. The mosque was elevated from ground level, to utilise the area underneath for commercial activities. Additionally, they introduced the concept of the gabled transept, similar to the Umayyid pattern. It was an added intersecting aisle that lay in the middle of the *Quibla riwaq*, facing the main entrance and leading to the *mihrab*, which had a special roofing system extended parallel to the *Quibla.* Its main function was to emphasise the major axis that terminates at the *mihrab.*

In the Ayyubid dynasty, *Madrassa* and *Khanqah* were first introduced. The *Khanqah* building was primarily established for extensive Islamic studies and inclusive deep analysis. As a consequence of having this new *Madrasa* college mosque typology, the traditional porticoes with columns disappeared and were replaced by *iwans.* This transformed the Mosque design into a large rectangular (or square) court surrounded by *iwans,* which opened into the court through arched openings.

Most of the Mamluk mosques became part of a larger complex that included a *madrasa* or *khanqah* and the mausoleum of the founder and his family. The Burgi Mamluks added some residential rooms for the founder and his family, apartments for the residence of *sheikhs* (rectors), and students, drink rooms, and a *kuttab* for teaching young orphans. Some mosques were suspended, with many shops placed in the ground floor.

The Ottoman's design concept was based on the centrality of the prayer hall with / without courtyards, having a *riwaq* around or behind it. The *Quibla* wall incorporating a *minbar* and a *miharb.*

The mosque of Mohamed Ali had the prayer hall consisted of a square area with four central huge piers supporting four semi-circular arches upon which the central large dome was mounted. This was surrounded by four half domes in addition to four small domes in the corners.

The present study analysed a number of Cairene contemporary mosques, and could classify the post-republican mosques into three broad trends. The first trend is modern in structure but conservative in vocabulary. It uses the classical Islamic architectural elements, forms and patterns with the addition of some modern services (e.g. alms centre), materials and structural systems (i.e. reinforced concrete), similarly, their decoration depended on traditional work and calligraphy.

The second category employs a number of traditional architectural elements, but in a modern framework. This modern framework includes (in addition to the structural system, services and materials) the new composition and re-shaping of these traditional elements. For example, minarets start to take non-traditional forms.

Finally, the modern typology, which is inspired by international styles and vocabulary, is characterised by non-traditional abstract forms and streamlined geometry (e.g. mono-sectional minarets throughout the whole length), in addition to modern structural construction techniques, materials, and services. **(Figure 5-41)** shows a number of these major transformations of the mosque's typology.

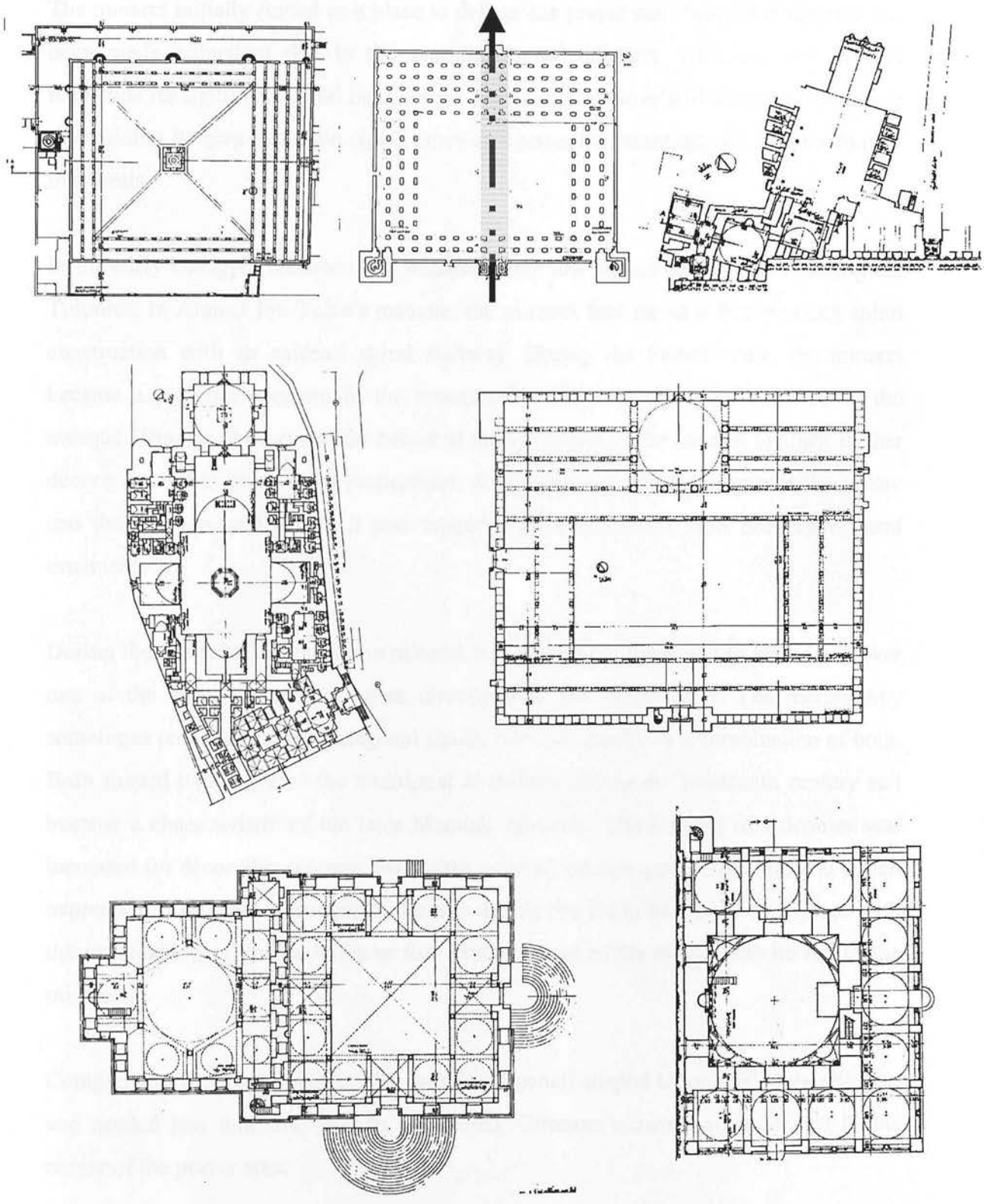


Figure (5-41) Tracing the evolution of the Cairene mosques' design typology.

5. Minarets

The minaret initially started as a place to deliver the prayer call from. This function has been made redundant due to the introduction of speakers. However, the minaret maintains its significance and has become part of the mosque's identity, in addition to maintaining its own symbolic significance and semantic meanings, see chapter four of this thesis.

In the early Umayyid mosques, the minarets were low square towers. Then during the Tulunids, in Ahmed Ibn Tulun's mosque, the minaret was set as a free-standing spiral construction with an external spiral stairway. During the Fatimid rule, the minaret became a principal element in the mosque, located over the main entrance of the mosque. The Ayyubids raised the height of the upper part of the minaret to allow further decoration and to improve its proportions. A balcony was added to separate the square and the octagon, and finally it was topped with a *Mabkhara* with decorative floral ornaments.

During the Baharite Mamluks, the minaret was gradually transferred to be located over one of the door-jambs, rather than directly over the portal vault. The morphology sometimes consisted of two octagonal shafts, two cylindrical, or a combination of both. Bulb shaped tops replaced the traditional *Mabkhara* during the fourteenth century and became a characteristic of the later Mamluk minarets. The number of balconies was increased for decorative reasons. Stalactites were added to support balconies and enrich expression. The most characteristic change during the Burgi Mamluks took place with the introduction of double bulbs or four bulbs instead of the single bulb on top of the minarets.

Compared to Mamluk minarets, the cylindrical pencil shaped Ottomans' were cheaper, and needed less time and skill to be erected. Ottoman minarets were located in the corner of the prayer area.

Figure (5-42) Tracing the evolution of the Cairene minarets.

In summary, several modifications have been made to the form of the minaret through different periods. In general it started as a square tower, developed into the cylindrical pencil shaped form by the Ottomans, passing through the multi division design topped by a *Mabkhara*, *Qulla* or a cone crowned with crescent. It reached its zenith in the Mamluk period. It is important to highlight here that the newly introduced modern mono-sectional minaret designs, which have merely one section from the start to the end, seem detached form this evolutionary process. These are not intersected either by balconies or by transferring from a form to another.

6. Domes

Generally, the domes were used throughout different historical eras and reached a remarkable stage by the Mamluks as they improved the ornamentation and transitional treatments.

Tracing the location of the dome, one can find that in the early stages it was singular and used to cover the ablution place in the court. Then, small domes were found in mosque corners adjacent to the *Quibla* wall. Next, the dome was located in front of the *mihrab* to emphasise it, and to locate the *Quibla.* Afterwards, the number of domes started to increase, sometimes to cover the *riwaqs* of the mosque or mausoleum. Subsequently a new style was developed to support one major dome on a number of half domes. Later, the Ottomans used a central dome surrounded by smaller ones.

The dome formation and ornamentation are the most significant issues in its evolution. The dome usually consisted of three main parts, the transitional zone, the drum and the topping helmet. The transitional zone was treated using various methods, the most common were spherical pendentives; squinches and stalactites. The height of the drum varied, and sometimes contained openings. Finally the helmet became mostly of the pointed dome type. Generally, the proportions were studied carefully to produce a fine-looking dome.

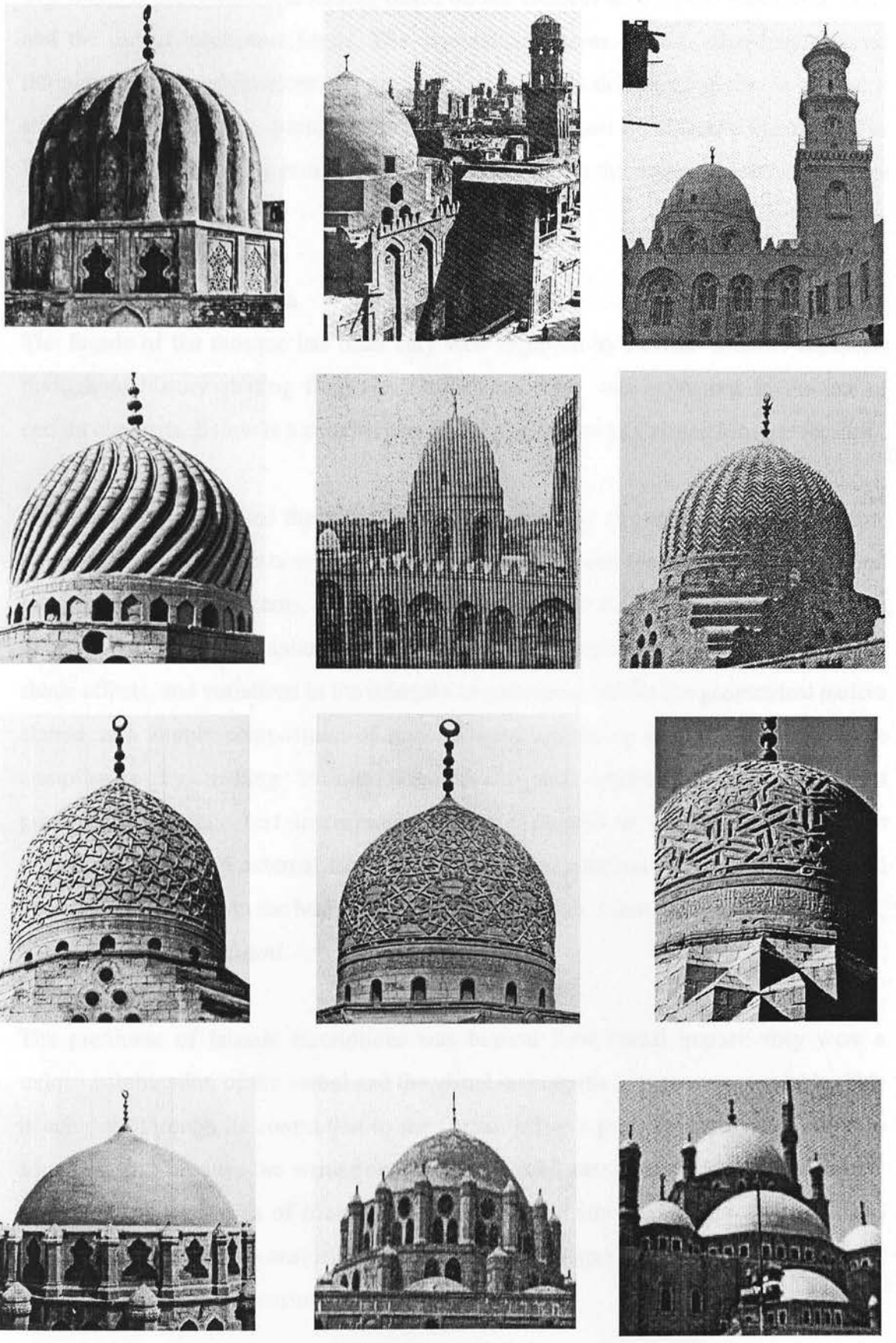


Figure (5-43) Tracing the evolution of the Cairene domes.

The internal decoration was mainly based on the element used in the transitional zone and the use of inscription bands. The external ornaments, on the other hand, passed through several modifications and developments through different periods. In general it started with simple ribs, during the time of the Fatimids and the Baharite Mamluks. The Burgi Mamluks made the most significant contribution to the dome, in contrast with the simple Turkish domes.

7. Facades and Decoration

The façade of the mosque has been very well regarded by Muslim Cairene architects throughout history starting from the Fatimid era. This was expressed in the use of certain elements. Below is a summary tracing the treatment of Cairene Mosque façades.

Because Islam prohibited the use of statues, paintings or any other figural decoration, other permissible subjects and elements were used. These included interlacing floral patterns, geometric patterns, calligraphic inscriptions or even a combination between them. The floral ornamentation used a contrast between repetitive variations of light and shade effects, and variations in the intensity of patterning. While the geometrical pattern started as a simple composition of lines to form interlacing spaces, then grew more complicated by making various composition and combinations with different proportions. Quranic text inscriptions were incorporated in the decoration of most Islamic buildings, on external facades, entrances, and interiors. These inscriptions and verses were selected on the basis of architectural function. Most styles used were *Naskh, Kufic, Thuluth* and *Diwani.*

The prettiness of Islamic inscriptions was beyond their visual impact; they were a unique combination of the verbal and the visual making the mosque very readable. This is achieved through its connection to the Quran, being a great source of inspiration to Muslims, and because the written word has a special sacred place in Islamic culture. Moreover, as the words of the Quran conveyed the divine message, so the inscribed verses of the Quran are considered to be the visual analogue of the Divine Message, not just a matter of two-dimensional decoration.

The Fatimids expressed decorative aspects in almost every element of the mosque. In

terms of the elevations' vocabulary, the decorative emphases were expressed by the artistic composition of stalactites, niches, openings, floral *Kufic* inscriptions, floral leafy ornaments, stepped cresting, and medallions ornamenting the spandrel of pointed arches.

The Mamluk orientation was more concerned with aesthetics and decoration. They spent a great deal in improving the way mosques looked. One of the most important features that characterises the Baharite Mamluks' facades is the stripped courses, composed of alternate courses of limestone and sand stone or red limestone. More sophisticated leaf-shaped cresting started to replace stepped cresting. The Mamluks clad their *mihrabs* with marble, or mosaic marble tiles, arranged in geometric and floral patterns.

Internal and external Burgi Mamluk facades depended on a vocabulary composed of inscriptions, geometrical and floral engraved patterns, pounded ornaments, altered courses of red and white or black and white bricks, vertical windows and grills, leaf-shaped crenellations and vertical rectangular niches, and stalactites. The facades were characterised by the use of different expressions to reflect the spaces behind, e.g. *kuttab*, mausoleum, *sabil* ... etc. In contrast the general theme of the Ottoman facades emphasised horizontality instead of verticality. Generally, the forthcoming periods utilised a number of these motifs depending on the same vocabulary in their designs with different combinations.

This part introduced a deductive analysis of the mosque in the light of the introduced theories in part one of the thesis. To support this, a fieldwork needs to be applied. Next part introduces the empirical work conducted to investigate the image of the role of the mosque in the minds the Cairene citizens, with reference to the theoretical model.

PART THREE

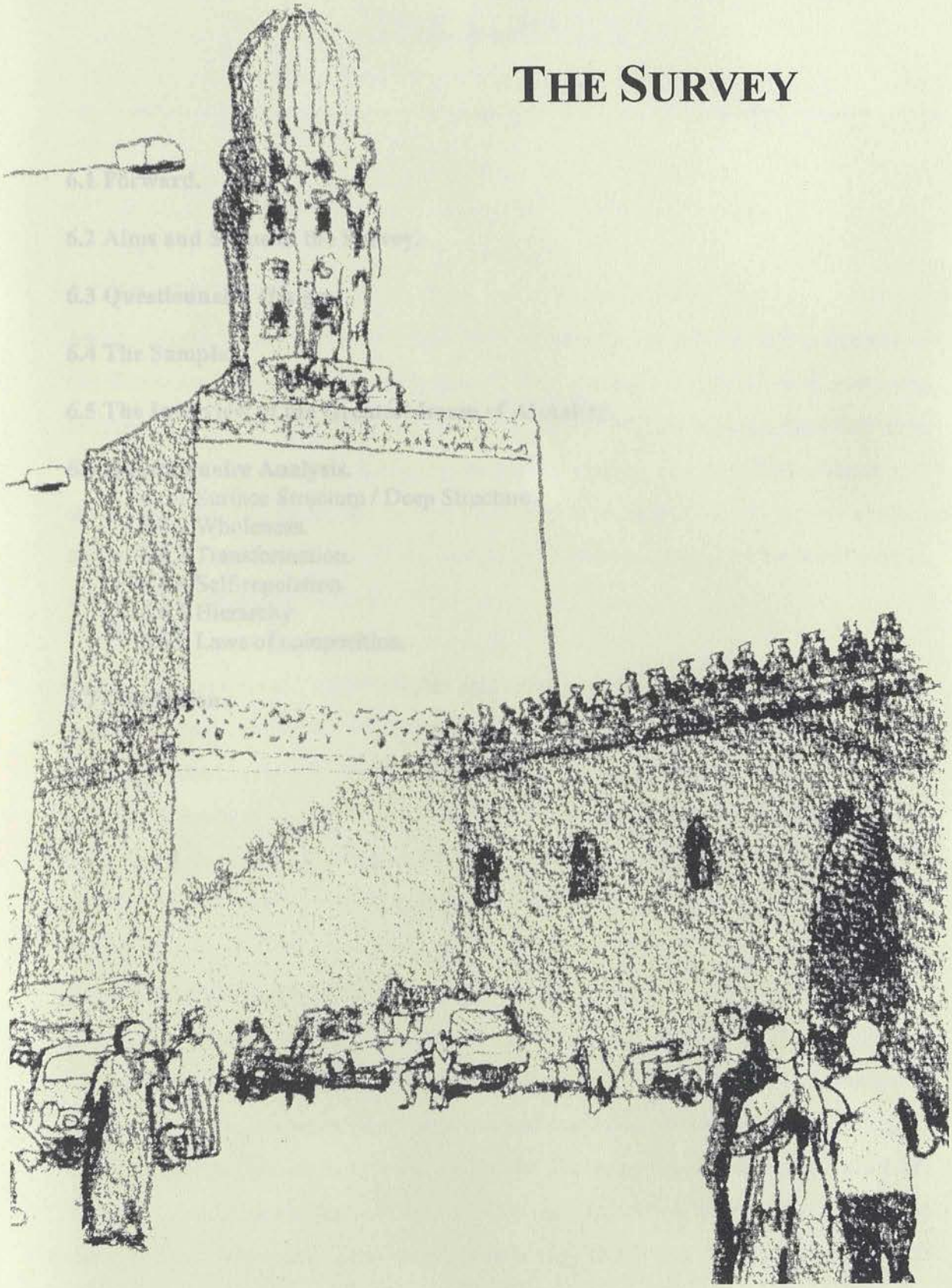
INDUCTIVE ANALYSIS OF THE MOSQUE

INTRODUCTION TO PART THREE

This part includes one chapter. The objective of this part is to provide empirical support to the previous two parts, the literature review and the deductive analysis of the mosque. This task is accomplished through the use of an open-ended survey. Chapter Six 'The Survey' explains the data collection methods, questionnaire design, sampling, and the interview of the Greatest Imam of Al-Azhar. The survey results are then discussed and analysed with reference to the theoretical approach described in Part One.

CHAPTER SIX

THE SURVEY



6

THE SURVEY

CHAPTER SIX

THE SURVEY

6.1 Foreword

As mentioned in the previous discussion, the mosque passed through a process of transformation, involving all aspects of life. This chapter is concerned with examining the process of transformation in terms of people's image of the mosque. Transformation does not happen in isolation, it happens because of people. The aim of this chapter is to discuss the field survey and the methodology used to interpret it. It will include sections describing the aims and scope of the survey, questionnaire design, the involved sample, and finally questionnaire analysis.

The research employed two methods of data collection, an open ended questionnaire and semi-structured interviews. The questionnaire methodology was applied in most cases by handing the questionnaire to the subjects for collection at later time. This method was preferred because it places less pressure on the respondent to give an immediate answer. When subjects are given sufficient time to answer attitude questions, they may consider each point more carefully, rather than replying with the first thought that comes to mind.

6.2 Aims and Scope of the Survey

Mosques in Muslim cities share common values, in spite of their differences in some aspects of social and political life, norms and customs etc. The survey was aimed at investigating people's attitudes, experiences and expectations of mosques in Cairo. This was intended to determine to what extent the discussed notions of structuralism are relevant to the Cairene mosque, and explore any additional issues raised by people through their responses. This was achieved by examining the meaning and the

transformation of the role of the mosque in the minds of Cairene Muslims.

6.3 Questionnaire Design

The survey was carried out using qualitative approach, in which the research gains knowledge based on multiple meanings of individual experiences, and meanings that are historically and socially constructed. The aim is to develop a theory, a pattern, or issue-oriented study. In such an approach, with the principal goal of developing themes of the data collected, researchers collect open-ended emerging data, observations, interviews and documents, which could involve text and picture data (Creswell, 2003).

The research employed an open-ended questionnaire to give more freedom to the respondent, to let their thoughts roam freely, and to avoid them giving a prepared set of replies. Furthermore, qualitative research expresses commitment to observing events, action, norms, values etc. from the viewpoint of the people who are being studied. This strategy of obtaining the respondent's viewpoint can be expressed as 'seeing through the eyes of people' (Bryman, 1995).

As a survey methodology the questionnaire is widely used in environmental design research. The basis of any questionnaire is the question itself. Hence the question should be designed in a very clear, direct and motivated way to encourage the respondents to understand it and answer easily (Bell, 1995).

Throughout the design of the questionnaire, three aspects were considered. First, the questionnaire should respond to the theory of structuralism, as the main underlying theme of the research. This was achieved by considering the concepts of structuralism while phrasing and classifying the questions under certain sections. In addition, the research was planned to have such concepts emerge from the responses of the subjects. Thus, questions attempted to provoke various deep meanings embedded in the minds of the subjects as well as involving aspects of time as applied to the past, present and future.

Second, the questionnaire should be short and straightforward so as to be easily understood by the subjects.

Third, for the purposes of the analysis, to clarify the results and make the relationship between questions much clearer, the questionnaire was divided into particular sections, each contained questions relating to specific aspects. The final draft was used in a pilot study, and the questionnaire was subsequently modified with care to maintain the main conceptual structure (see 6.4 The Sample).

Fourteen questions were included. These involved a thorough investigation and observation of the external objective characteristics of the mosque as seen through the projection of people's subjective feelings and the hidden dynamics of their perception and reaction to the mosque. The questions were designed under a number of sections, as follows:

A) Personal Information:

This section was included to provide personal data about the subjects, whose backgrounds, genders, age-ranges, etc. can have significant reflection on their responses and perceptions. This obviously is of great help to the process of interpretation that forms the basic foundation of qualitative analyses undertaken hereunder.

B) General Information about the Cairene Mosque:

The survey design starts from the broader context, and gradually moves towards the specific. The motivation behind this strategy is to let people express the holistic nature of the mosque, and relate its subjective attributes to the objective features through their own perception. In this section, questions about liked and disliked phenomena in particular mosques were utilised to touch on personal experiences, a process which significantly helps respondents to remember and express their own experiences.

C) Information about the transformation of the mosque:

This section traces the past, present and future transformation of the mosque. This is done for two reasons. First, to respond to 'transformation' as one of the most important 'structuralist' concepts. Second, it helps people relating particular desirable and undesirable, past and present experiences with the mosque, and how they wish these experiences to be transformed or improved in the future. This generates more notions

for discussion, and broadens the scope of the study and findings.

D) Information about the location and architectural features of the mosque:

This section digs deeper in people's minds, and asks about more specific domains related to the mosque. This helps provoke ideas and thoughts in different areas they might not have touched on in earlier responses. This section traces the sought and the unneeded aspects of the location and the architecture of the mosque. This is done by seeking knowledge of the rules and fatal faults in selecting the location of the mosque. This is also applied to its architecture.

E) Additional information:

This section was added to invite any additional contributions or unforeseen issues, which people might need to raise if the survey context did not allow it.

It is important to realise that none of these questions was of specific significance for the objective of this questionnaire on its own. They acted as a mechanism to provoke people's ideas, and encourage them to address more notions at wider and deeper contexts and levels. It is all a process of stimulating subjects' minds to address notions that are associated with mosques.

Figure (6-1) illustrates a translation of the questionnaire, as they were originally distributed in Arabic. The translation of some phrases may not be literally accurate, but this still gives a good idea of the nature of the questions.

A- Personal Information

Serial No. :
Name (optional) : Religion :
Age : Gender :
Educational Status : Occupation :
Address : Length of Stay :
Remarks :

B- General Information about the Cairene Mosque

1) Mention five different feelings you have whenever you hear the word "Mosque".
2) Mention three Mosques you most like in Cairo, please mention two reasons for each.
3) Mention three Mosques that have aspects you don't like in Cairo, please mention two reasons for each.

C- Information about the Transformation of the Mosque

4) Mention three favoured aspects in the historical Mosques, please mention two reasons for each.
5) Mention three disfavoured aspects in the historical Mosques, please mention two reasons for each.
6) Mention three favoured aspects in the recent Mosques, please mention two reasons for each.
7) Mention three disfavoured aspects in the recent Mosques, please mention two reasons for each.
8) Mention three things you would like to see in the future Mosques, please mention two reasons for each.
9) Mention three things you would not like to see in the future Mosques please mention two reasons for each.

D- Information about the Location and Architectural Features of the Mosque

10) Mention three important qualities that should be available in the Mosque location, please mention two reasons for each.
11) Mention three important qualities that should be avoided in the Mosque location, please mention two reasons for each.
12) Mention three qualities you like in the architecture of the Mosque, please mention two reasons for each.
13) Mention three qualities you dislike in the architecture of the Mosque, please mention two reasons for each.

E- Additional Information

14) Write any other comments that were not included in the questionnaire, and you believe could help in the research.

Figure (6-1) The questionnaire.

6.4 The Sample

Based on the main objectives of this research, certain guidelines were drawn up in order to choose the subject sample for this survey. The research explores the transformation of

the role of the mosque in Cairo, which gives the first guideline; the study is dealing with members of the Muslim society of Cairo, having enough knowledge of involvement in the subject of the research.

Secondly, to ensure that the different socio-economic groups of the city's population were sufficiently represented in the sample of the survey, the city was divided into three categories according to their predominant socio-economic characteristics: high-class, middle-class and low-class residential areas. Two districts were then selected randomly from each category.

In addition, the research employed the 'snowball sampling' method to increase the number of subjects, since convincing subjects to take part in the study proved difficult. This was due to a lack of trust in such research. So many studies have been undertaken in the past, with little or no official response to their recommendations. This obstacle was only overcome through contacts with friends and family, who in turn were part of the 'snowball' technique. The 'Snowball' method is a process of reference from one person to the next, in which each respondent can be asked to recommend other people. Those recommendations are then included in the sample. Utilising the 'snowball' method enables the researcher to use the nominator as a reference to enhance his credibility (Denscombe, 1998).

Taking in consideration that there may be certain modifications and changes required when the questionnaire was used, a pilot study was undertaken. This proved to be the case. For example, people were very conservative when responding to question three in its old form 'Mention three mosques that you don't like in Cairo, two reasons each'. The reason relates to the very sensitive nature of this particular issue, people were afraid to name any mosque considering that this may be considered as an attack on house of God. The question was rephrased as 'Mention three mosques that have aspects you don't like in Cairo, two reasons each'.

The questionnaire was then distributed to people at their homes. They were given one week to complete it before the collection process began. This was done to allow them to feel free to write anything they wanted and express their feelings, ideas, experience and

expectations without any pressure. The process of collecting the questionnaires took more than double the effort and time allocated to this process. Some of the participants lost their copy of the questionnaire, which required the researcher to provide them with another copy and give them another appointment for collection. While some people were not present at the time of the collection process. A number of respondents said that they would send the questionnaires by post but these were never received.

In small-scale research, samples are recommended to involve between (30) thirty and (250) two hundred fifty cases. However, in the case of qualitative research there is another argument relating to the size of the sample and the selection of the subjects to be included. A small sample size is quite in keeping with the nature of qualitative data (Denscombe, 1998). The final number of subjects was (54) fifty-four out of the (88) eighty-eight questionnaires distributed. The total number of the subjects collected was (61) sixty-one cases. This number was reduced further to become (54) fifty-four after the revision process, and exclusion of invalid responses. Illogical, incomplete, nonsense and weak answers were excluded. The sample varied according to age, gender, educational status, occupation, residential location, length of stay at residence and socio-economic status. These various characteristics helped to avoid bias in the sample. The following section discusses the personal information of the subjects.

Name:

Respondents were given the option whether to include their names or not in order to avoid any unneeded inconvenience when mentioning facts in response to the questions. However, only 3 people out of the total number did not mention their names, i.e. about 94% included their names. This reflects that people were very confident about their responses.

Age:

The respondents are grouped into five age groups, each of nine year intervals except for the under twenty and over fifty groups, as shown in **(Table 6-1)**, below.

Age	Under-20	20-29	30-39	40-49	50-Over	Total
Number	1	18	13	16	6	54
Percentage	1.9%	33.3%	24.1%	29.6%	11.1%	100%

Table (6-1) Distribution of the respondents by age.

Gender:

The gender distribution was thirty-three males and twenty-one females. **Table (6-2)** below illustrates this distribution in number and percentage. It is to be noted that, in some cases, it was difficult to hand the questionnaire to females due to local traditions and norms.

Gender	Male	Female	Total
Number	33	21	54
Percentage	61.1%	38.9%	100%

Table (6-2) Distribution of the respondents by gender.

Educational status:

Respondents were classified into six main groups according to the degree they held: preparatory degree, secondary degree, diploma, baccalaureate, master and doctorate. This was done in order not to have responses biased by certain educational backgrounds, **(Table 6-3)** below shows this distribution.

Education	Prep.	Sec.	Dpl.	Bcl.	Mstr.	Dctrat.	Total
Number	4	5	4	32	6	3	54
Percentage	7.4%	9.3%	7.4%	59.3%	11.1%	5.5%	100%

Table (6-3) Distribution of the respondents by educational status.

Occupation:

A wide range of occupations is represented in the study sample. Occupation was divided into broad groups to offer a better understanding as shown in **(Table 6-4)** below. One group contains students or people who are taking part in any kind of education; remaining groups consist of government staff; private firms staff; businessmen; professors and university staff; teachers; housewives and finally retired people.

Occupation	Stdnt	Gov.	Prvt.	Bs/Mn	Prof.	Tech.	H/Wif	Retire	Total
Number	6	13	18	4	3	7	1	2	54
Percentage	11.1%	24.1%	33.3%	7.4%	5.5%	13.0%	1.9%	3.7%	100%

Table (6-4) Distribution of the respondents by occupation.

Place of Residence:

As mentioned earlier the city was categorised into three classes: high-class, middle-class and low-class residential areas. Two areas were then selected from each category. The high-class category covered Heliopoles and Al-Mohandesin; the middle-class covered Kobri Al-Qubba and Al-Haram and finally the low-class areas included Al-Zawya Al-Hamra and Boulak Al-Dakroor as shown in **(Table 6-5)** below.

Place of Residence	Heliopoles	Al-Mohandesin	Kobri Al-Quba	Al-Haram	Al-Zawya Al-Hamra	Boulak Al-Dakroor	Total
Number	9	6	12	11	9	7	54
Class	High Class		Middle Class		Low Class		
Total Number	15		23		16		
Percentage	27.8%		42.6%		29.6%		100%

Table (6-5) Distribution of the respondents by place of residence.

A-7 Length of Stay

(Table 6-6) below classifies the number of persons involved in the survey into three groups according to their length of stay at their current place of residence.

Length of Stay	Less than 10 years	(10-25) years	Over (25) years	Total
Number	21	19	14	54
Percentage	38.9%	35.2%	25.9%	100%

Table (6-6) Distribution of the respondents by the length of stay.

6.5 The Interview of the Greatest Imam of Al-Azhar

In semi-structured interviews, the interviewer prepares a few open-ended questions, aiming to elicit views and opinions from the interviewees. The interviewer should be

flexible to allow the interviewee to develop ideas and speak comprehensively about the notions raised. The semi-structured interview allows interviewees to use their own words, and develop their own thoughts. This creates a better environment for uncovering complex issues, and provides a better opportunity for in-depth investigation, especially those which explore personal experience and attitudes (Denscombe, 1998).

It was found essential to apply the semi-structured interview methodology to key religion men (Sheikhs and Imams), especially with the Greatest Imam Dr. Mohamed Sayyid Tantawi the Sheikh of Al-Azhar, who is a very important figure, and may be the considered as the most important religion man for the Muslim world. He is as important as the Pope of the Vatican for the Catholic people is.

This was done for two reasons; firstly, in order to have their opinions about the role of the mosque to Muslim society both historically and contemporarily. Secondly, because of the significance of these people, they may bring to light a number of important aspects not otherwise raised by the study. This helped to enrich the quality of the work, increased its ability to respond to the main objective of this study, and acted as raw material for data analysis.

In the forthcoming pages, the study reviews the English translation of the interview of Sheikh Al-Azhar, which was carried out in Arabic. Sheikh Al-Azhar has an official administrative responsibility, in addition to his religious role. This made it very difficult to obtain an appointment with him due to his many work commitments, and it took more than a month to arrange for a meeting, which was consequently very brief.

Dr. Tantawi stated that the mosque in general, and the Prophet's mosque in particular, has always been a source of guidance in religious, scientific, social and economic issues for all Muslims.

The Sheikh additionally stated that the Prophet's Mosque has never been a place merely for prayer. During the Prophet's time, it was a centre for social services. One day, the Prophet (pbuh) saw a number of poor people in his mosque. That day he called on all Muslims, and delivered a profound speech, in which he said: "Oh people, fear your Lord

who created you of one soul ... give charity of a Dinar, a Dirham, a pound of corn or malt". People's donations in response to this call were so generous, this pleased the Prophet (pbuh) and enabled him to attend to these poor people's needs. Then he cited his famous Hadith "Whoever initiates a good deed will be praised for doing it, and for whoever does it, until the Day of Judgement".

Figure (6-2) The author with the Greatest Imam Dr. Mohamed Sayyid Tantawi the Sheikh of Al-Azhar.

The above situation shows that in addition to prayers, the mosque was a place to actualise the meanings of solidarity, co-operation, obedience to Allah, refuting all sins and offences.

The Great Imam depicted the mosque as a ministry for education, similar to Al-Azhar's current role, where people learned reading, writing and had access to a wide range of knowledge. The Prophet (pbuh) said "Whoever Allah is pleased with will learn him more about religion".

The Sheikh also highlighted the defensive role of the mosque. From the Prophet's mosque came out numerous troops to enlighten people, propagate Islam and spread peace throughout the Earth. From that mosque, Abu- Bakr, the first Caliph, sent eleven armies to fight those who attacked Muslims and wanted to destroy Islam.

Accordingly, His Excellency concluded that the mosque has been and will always be a source of guidance in all religious aspects such as prayer, fasting, alms, pilgrimage, etc. as well as in non-religious aspects such as science, society, defence, morality, economics, etc. The mosque is a place that leads to happiness in this life and the hereafter.

With regard to the current situation, Sheikh Tantawi said: I cannot say that all contemporary mosques are the same as the Prophet's. There are hundreds and thousands of mosques of different scales in Egypt alone. Obviously, the smaller scale mosques, like the ones beneath residential buildings, cannot perform the same role and services, as large mosques like Al-Azhar, which has contributions to different aspects of Muslim life and society.

The Great Imam also expressed a thorough understanding of the influence of transformation, saying that society is always changing and the mosque has transformed to cope with the transformation of Muslim society. It maintained its role in society in different forms. Each period in time has its own vision ideas and thoughts, which evolve from day to day, month to month and year to year. Imam Ali Ibn Abi Taleb once said: 'Do not oblige your sons to live by your minds … they have been created for a time that is different from yours'. This continual change is the reason for having such variation in the role the mosque performs.

For example, people in certain mosques adopt ideologies which they then try to propagate. When we examine these ideas they often appear to involve some form of extremism which does not comply with the principles of Islam. These issues are mainly about forgiveness and equality. For example, all people are equal in rights and duties, and belief is between God and the individual. Belief should not be forced or imposed on people. Imposing belief by force is not genuine Islam, it is hypocrisy and lies. Obviously there are many ideologies, some of which are good, some are not. The positive signs in Egypt that the good ones outnumber the bad. Al-Azhar tries to correct such mistaken ideas, and strives to expose the bright side of Islam by clarifying that Islam is about forgiveness, equality, and fairness.

Then he recited the following verse from Surat al-Nesa':

> *"Verily! Allâh commands that you should render back the trusts to those, to whom they are due; and that when you judge between men, you judge with justice. Verily, how excellent is the teaching which He (Allâh) gives you! Truly, Allâh is Ever All-Hearer, All-Seer."*
>
> (The Holy Quran, 4:58)

Sheikh Tantawi added that mosques in Egypt are performing a good role, but not a perfect one. In the past few years there has been a degree of co-ordination between Al-Azhar and the Awqaf Ministry. Al-Awqaf appoints thousands of Imams yearly, the majority of whom are graduates of Al-Azhar religious colleges, and 60% of mosque Imams now are Al-Azhar graduates. These Imams receive continual refresher training and lectures, some of which I deliver myself. Al-Awqaf also arranges courses, lectures, exams and awards for these Imams. This is done to enhance the level of their progressive qualification.

From his own experience, Dr. Tantawi believed that setting a good example is the best way for other mosques. When Sheikh Al-Azhar is seen delivering the Friday preaching in person, mixing with the people, and responding to their inquiries after prayer, the rest of the Imams will automatically follow the same pattern in dealing with people in other mosques.

When asked about the mosque's location, the Great Imam recommended that in new towns, the mosque should be in a distinctive place beside the social, economic, and administrative institutions to disseminate its guiding role to people.

Speaking about architecture, Sheikh Tantawi said that the architecture of the mosque influenced and has been influenced by Muslim society throughout its transformation, emphasising that the Mosque is not only a building for worship, but in fact goes far beyond that.

His brief message to architects and designers was to design the mosque in a beautiful way. He recalled the Prophet's (pbuh) saying: "Verily, Allah is beautiful and appreciates

beauty". However, he believes architects should also understand that the beauty of the mosque lies in the role it plays in Muslim society.

Eventually, when asked about having a mausoleum in the mosque and whether or not this contradicts with the Islamic legal system, Dr. Tantawi said it did not really represent a problem. However, it should be separated from the prayer area and be located in a place that is away from the *Quibla*.

6.6 Questionnaire Analysis

As noted previously that the survey was designed and handed to subjects in Arabic. It was translated to English at two stages. First, and as stated earlier, in the initial design stages to consult supervisors in Britain. Second, after collecting responses to include the results and analysis in the thesis. Thus, the translation is not always literally accurate, but is meant to provide the general essence of the participant's perceptions.

Patton quotes "The process of data collection is not an end in itself. The culminating activities of qualitative inquiry are analysis, interpretation and presentation of findings. The challenge, therefore, is to make sense of a massive amount of data, reduce the volume of information, identify significant patterns and construct a framework for communicating the essence of what the data reveal" (Patton, 1990, p. 371).

It is also important to be aware that the researcher's identity, values, beliefs, experiences and backgrounds cannot be entirely eliminated from the interpretation of the qualitative data. There is a common acceptance among many qualitative research theorists and practitioners that researcher's self is inevitably an integral part of the analysis, and should be acknowledged as such (Denscombe, 1998).

The analysis process was initiated by a general reading through all of the responses to acquire a general sense of the information and notions expressed by the participants, as well as to develop a general impression of their overall depth. A process of coding the responses was then carried out, in order to categorise them under a group of phenomena or names. The following step was the piling process. This is a critical step, and is considered as the basis for extracting information from the questionnaires. It enables the

research to extract valuable 'nuggets' of information from an ocean of responses. During this process, the frequency of every code is summed to reveal the number of times it was referred to by respondents.

Throughout the general reading it was noted that some aspects share the same basis. For the respondents, the view exceeds the materialistic appearance, and is a feeling of belonging, identity, privacy, tradition etc. This mixture of feelings reflects how people perceive the mosque, understand it and deal with it. Hence, whenever a question was asked it provoked these feelings in the respondent, so they start writing and writing... In conclusion, people react to mosques globally and effectively before they analyse them and evaluate them in more specific terms. It is a form of holistic, integrated understanding of the mosque responding to its holistic nature as an institution.

The main concern of this survey was with examining perceptions of the Cairene mosque and exploring the relevance of structuralism to it. So, there was no need to pay particular attention to the individual questions throughout the analysis process. **Thus, the analysis was based on a structuralist interpretation of the responses, instead of the standard statistical tests. As such the next step was to apply the concepts of structuralism discussed earlier in chapter two to the data obtained from the piling process**. This was achieved by interpreting the responses using a number of methodologies which complement each other under the umbrella of structuralism. The first approach is to identify any shared dimensions between responses. Bearing in mind that dimensions are assumed to be the motivating forces behind any occurrence in the environment, whether the occurrence is physical or emotional, visible or invisible, permanent or transitory. By concentrating the information, it is possible to go into more detail and classify them into hidden meanings and forces beyond the direct response. This assists the research in employing the first methodology, which relates to the **surface structure and deep structure**. The second approach studies the **holistic** nature of the mosque. Third, is the process of identifying the **transformation** of the mosque in the past, present and future. Subsequently comes the study of the **self-regularity** of the mosque throughout its transformation. Then the **hierarchy** of different roles and hidden meanings is highlighted. Finally, the study examines the **laws of composition** of the mosque, deriving examples from the liked and disliked mosques mentioned by the

subjects. However, it should be mentioned that these concepts are cohesively interrelated and act in a holistic manner in synthesising the structure, making it hard to separate them through the study. The analysis attempted to apply those concepts to the mosque with reference to the responses.

It should be noted that the research abandoned all religious aspects mentioned by the respondents throughout the analysis. This is because the religious role of the mosque is an obvious one.

6.6.1 Surface Structure / Deep Structure

Deep structure is identified as an abstract underlying order of elements that allows the functioning of the rules of transformation in outlining the surface structures. In other words, it is in the deep structure and laws of transformation which produce the surface structure.

Hence, the surface level concerns the sensible aspect and the deep level is about the syntactic aspect. Deep structures are the result of a cognitive process whereby an object or event acquires a meaning beyond its instrumental use. Deep structures help people to understand the world and form it as a meaningful entity. Therefore, one cannot identify the rule, pattern and vital components by just looking at the surface appearance of a physical object (see chapter two).

The data obtained from the piling process were reorganised in **(Table 6-7)**, and classified into three columns. The second column relates to the action, event or the component conceptualised by the respondent. This represents the surface structure i.e. people meeting, religious lectures, library, minaret etc. However, they were categorised into domains, forming the first column, in order to make it easier to read the responses. Finally, the third column includes motivations or deriving forces for the actions mentioned in the second column, which is the deep structure, such as social cohesion, enlightening people, symbolic values etc. It is organised in this way because a large number of those motivations were repeated by the respondents with different notions. They were not arranged in the form that each motivation is paired with the mentioned notion as one would not be able to determine the total frequency of each motivation.

Consequently it would not be possible to sense the significance of such motivations if they were scattered here and there.

Domain	Notion (Surface Structure)	Freq.	Motivations (Deep Structure)	Freq.
Social	People meeting.	61	Attracting people to the mosque.	54
	Social services.	45	Social cohesion.	48
	Alms giving.	33	Solving Community problems.	42
	Weddings & Funerals.	30	Personal emotions.	35
	Bad use of loud speakers.	25	Quietness.	29
	Discussing issues.	24	International / National significance.	23
	Open all day.	23	Mosque development.	14
	Begging around the mosque.	20	Remembrance of the Holy Mosques of Makkah & Al-Madina.	10
	Elderly people care.	18	Mercy & forgiveness.	6
	Sleeping in the mosque.	15	Purity.	5
	Orphans care.	13		
	Entertainment activities.	13		
	Nursery for working mothers.	6		
	Religious ceremonies.	4		
	Vocational guidance projects.	3		
Educational	Religious lecturing.	101	Knowledge.	73
	Qualified Imams.	98	Enlightening people.	48
	Moral guidance.	52	Avoid fundamentalist movement.	42
	Non-religious lecturing.	34	Safeguard the Image of Islam.	38
	Library.	26	Significance of Quran & Sunnah.	37
	Collaboration with Al-Azhar.	11	Propagating for Islam (*Da'wa*).	21
			Glory of Islam.	16
			Islamic advice (*Fatwa*)	14
			Lengthy speech.	10
			For the good of the society.	9
Political	Speeches about political issues.	10	Unify Muslim Nation.	3
	Army preparation.	7		
	Ruling the state.	2		

Historical	Historic value.	40	Associated to great Muslim person.	34
Medical	Infirmary.	27	Seeking better health for the society.	26
Juridical	Judgement.	4	Fairness.	3
Architectural & Urban.	Good design.	178	Aesthetic.	112
	Spaciousness.	126	Accommodate large number of worshippers.	88
	Simplicity in ornamentation.	88	Psychological comfort.	85
	Maintenance.	83	Cleanliness.	52
	Good location.	76	Avoid heterodoxy.	43
	Women prayer area.	54	Avoid bad smells.	42
	Minaret.	51	Unity.	39
	Ventilation.	38	Spirituality.	37
	Composition of elements.	37	Safety.	33
	Mausoleums.	33	Respect & dignity of the mosque.	32
	Sufficient number of ablution places.	30	Accessibility.	31
	Dome.	25	Symbolic values.	26
	Quranic calligraphy.	24	Tranquillity.	25
	Availability of car parking areas.	24	Privacy.	24
	Huge internal height.	21	Being a landmark.	23
	Avoid congestion.	20	Devotion.	17
	Suitable materials.	19	Physical comfort.	14
	Illumination.	18	Audibility.	14
	Independent from other buildings.	14	Against Islamic rules.	12
	The use of many columns.	13	Prayer call.	11
	Surrounding urban pattern.	13	Avoid long waiting.	10
	Climatic treatments.	11	Monumentality.	10
	Ablution places not in *Quibla* direction.	11	Minaret should be highest structure.	8
	Use of modern technology.	11	Concentration.	8
	Availability of courtyard.	10	Large free spans.	7
	Orientation.	9	Visual interaction with the Imam.	7
	Avoiding to have other mosques nearby.	9	Considering future extension.	5
	Separation between wet & dry areas.	8	Continuity of prayer rows.	5
	Portal.	7	Direct contact to the sky.	4
	Minbar.	6	Alignment of *Quibla* with walls of the mosque.	4
	Quiet location.	5	Emphasise the significance of the mosque.	3

	Availability of infrastructure.	5	Hygiene.	3
	Mihrab	3	Movement difficulty.	3
	Multiple entrances.	3	Heritage.	2
	Avoid surrounding high buildings	2	Visibility of the mosque.	2
			Like the Prophet's mosque.	2
			Durability.	2

Table (6-7) Compilation of all responses grouped into domains, notions and motivations.

Social:

One aspect of the mosque is its connection to and its embodiment in the community. The mosque is a construction in a space of social values with all of its complexity. "Islam handled many social aspects, that is why it could be said that the mosque treats secular matters under the religious umbrella, there is honesty and purity within the mosque, unlike the outside of the mosque where power dominates" (Dawood, 2000).

As a social institution, the mosque serves to strengthen social interactions, bonds and relationships throughout society. People meet in the mosque on different occasions i.e. weddings and funerals for example, although, not as frequent as used to be the case. This has its social implications for society, unifying society, and consequently promoting strong social cohesion of the whole community. Needless to say that these positive values will more likely be accomplished if meetings were more frequent. This desire was reflected in the responses of study participants, and will be seen in section 6.6.3.

The respondents also showed concern for the memorial and emotional implications of the mosque in provoking the feeling of the greatness of the two Holy Mosques in Makkah and Al-Madina. Respondents also associated other memories with the Cairene mosques, especially in relation to the holy month of Ramadan and the *Tarawih* prayers (see chapter three). This was mentioned by a number of the respondents specifying the mosques of Amr Ibn al-A'as, Al-Hussein and Al-Sayyida Zeinab.

The aspect of 'alms giving' also has significance to people, because it could help in maintaining and developing the mosque. On a deeper level, they also said that when this money is managed or directed by the mosque it is guaranteed that money would go to

people in a real need. The mosque is a trusted place, more than any other organisation or association with regard to applying *Saharia* (Islamic law), and without any personal benefits or personal dedications which might support fundamentalism and extremism.

Educational:

The mosque is seen as having an educational role, both today and in the past. This involves religious education, concerning the Quran and the Sunnah, as well as other disciplines depending on the period, as will be elaborated in the (section 6.6.3) of the analysis. However, a number of moral, ethical and Islamic principles are taught through the religious sessions such as equality, sacrifice, unity, community, knowledge, nature, purity, honesty, discipline, cleanliness etc. This may solve society's problems and contribute to a better society, where good values are the dominant behaviour of all members of society. Libraries are attached to a number of contemporary mosques. This helps to make up for the lack of the religious knowledge of society by arranging lectures, conferences, and symposiums in addition to housing book collections.

The notion of qualified Imams was mentioned by the respondents. Imams are responsible for educating and teaching society about their religion, so if they were not qualified the consequences would be problematic. For example, in its deep understanding, it could result in confusion or the creation of the fundamentalist and extremist groups. This sheds light on the vitality of their role in society towards enlightening Muslims about their religion. This enlightenment would help to prevent any religious misinterpretation. It could also allow heterodoxy. It is worth mentioning that the unqualified Imam does not merely refer to knowledge qualification, but also to behaviour and ways of dealing with people. Some Imams react aggressively, which has negative implications for the people and may lead them to depart from good religious practices. This is an important element that can create a bad image for the mosque, religious people and religion in general, and could have many negative implications. In this regard the goal is to attract people to the mosque.

Being aware of this, Sheikh Mohamed Sayyid Tantawi stated "In the past few years there is a sort of co-ordination between Al-Azhar and the Awqaf Ministry. Al-Awqaf appoints thousands of Imams yearly, the majority of whom are graduates of Al-Azhar

religious colleges, that 60% of mosque Imams now are Al-Azhar graduates. These Imams receive continual refreshing training and lectures, some of which I deliver myself. Al-Awqaf also arranges courses, lectures, exams and awards for these Imams. This is done in order to, always, enhance the level of their progressive qualification." (Tantawi, 2000).

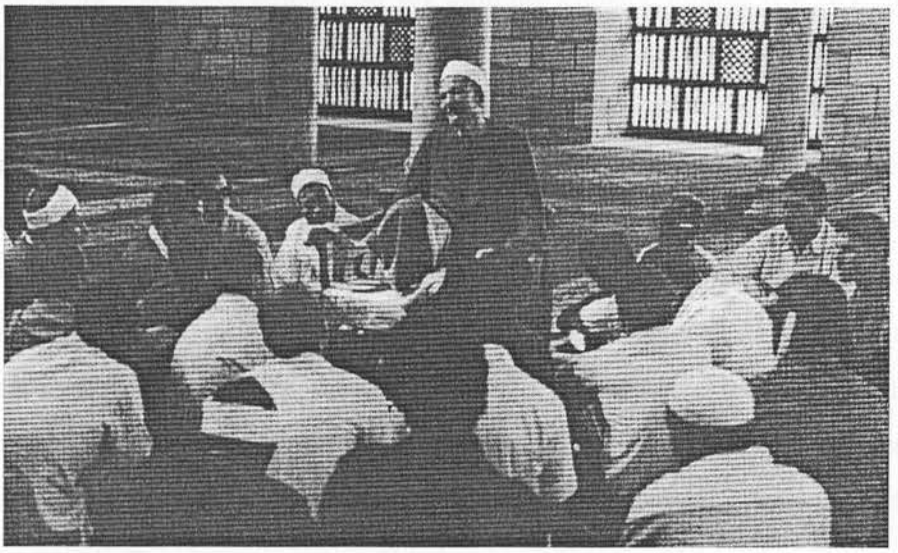


Figure (6-3) Education circle in the mosque. Source (Hayes, 1978).

Political:

Most of the notions raised regarding politics are related to the historical role of the mosque. Respondents mentioned speeches about historical issues, state rule, and preparation of the army. The presence of the mosque provides tremendous authority and encourages Muslims to fulfil their role in the life of the society and protection of Islam. Prophet Mohamed (pbuh) and the Caliphs were political leaders. Yet, none of these roles remain active due to the separation which took place between politics and the mosque.

The motivation of 'unify Muslim Nation', which is considered as a deep structure, was referred to by a number of respondents. It reflects a feeling of anxiety towards the unification of the Muslim Nation, to become strong as in the past.

Architectural:

Mosque architecture is the product of a long synthesis of a number of religious, cultural and social interactions and adaptations. Psychological and symbolic aspects are

extremely important. What gives mosque architecture its significance, comes from the great variety of historical periods that together form an overall unity to the context of Cairo. In the next few pages the discussion centres around the architecture of the mosque as addressed by the respondents.

The respondents were concerned with the climatic considerations, orientation and safe structural systems. In the context of deep understanding, this feeling of safety relates to a sense of tranquillity and spirituality to facilitate devotion. Respondents were concerned with a number of surface phenomena, such as the convenient composition of the architectural elements and having some calligraphy of Quranic verses in different places in the mosque. They also included an emphasis on the internal height and spaciousness of the mosque. Also mentioned was the use of good, durable materials, which was reflected, deeply, on the aesthetics of the mosque as a building. In addition, they emphasised the significance of simplicity in architecture, decoration and ornamentation so as not to divert people's concentration during prayers and obstruct them from devotion.

The notion of having a mausoleum in the mosque was raised by the respondents. Some liked mosques with a mausoleum, such as Al-Sayyida Zeinab. Others were a bit conservative, being confused whether it was against Islamic law or not and mentioned it as something to be avoided to be on the safe side. Generally, if the mosque was initially built as a mosque then a mausoleum was added separated from the prayer area and away from the *Quibla,* then this was considered as fine. On the other hand, if the mosque was built over an existing mausoleum, it was thought to be against Islam (see chapter three). A negative aspect related to mausoleums is heterodoxy. People invent things that have nothing to do with Islam, which creates a very bad image of the mosque. This is, at the deep level, linked to a lack of religious knowledge. However, it should be realised that most mosques with mausoleums are older mosques and it is rare to have mausoleums in contemporary mosques. With regard to the historical mosques, response also showed concern for insufficient maintenance and restoration. This may lead to a loss of heritage and a negative image of such mosques.

Respondents commented on having more than one mosque in the same area. Some of

them were for the idea, seeking as many mosques as possible, even in the same area, same block or even the same street. This was related to the propagation of Islam as well as problems related to the increasing population. People considered that one mosque in the area would not be sufficient to accommodate all worshippers. Others were against the idea stating that Islam is about unity not about creating different groups. Two mosques in the same street will not promote unity, as people will be divided into two groups. One group may prefer to go to the first mosque, while the other might recommend the second. This will create a sense of competition instead of encouraging the formation of one united group. Imam Ahmed Ibn Hanbel stated: "Do not build mosques adjacent to one another unless there is an urgent necessity for that, like if the first is too small or a similar reason" (Ibrahim & Mostafa, 1992, p.491). Some respondents preferred the idea of building spacious mosques, considering future extensions to accommodate population growth, showing concern for the deep structure of unity. It should be realised that sometimes, reasons for having more than one mosque in the same area may be historical in that they were constructed in different periods of time.

The participants had two other criticisms. Firstly they were conservative about having the mosque underneath a building, which creates a number of constrains to its area, architecture and structural system. The opportunity to make any architectural creation will be very limited. Furthermore, it will be dependent upon the structural elements of the building, which also creates structural limitations. In addition, the mosque will not have the desired level of privacy, negatively affecting the image of the mosque. Respondents were also suspicious, on a religious level, that having such place for prayer, may result in the toilets in the building being over the prayer area or even the *Quibla* (see chapter three).

The second criticism emerged from the first, and relates to having walls in the prayer area not matching *Quibla* direction, so that worshippers have to stand in angled rows. Although it is acceptable from the religious point of view, it is better to have the *Quibla* wall match the *Quibla* direction. This might be difficult in the case of a mosque situated underneath a residential building.

The participants were also concerned about a number of architectural elements considered to be part of the surface structure. For example, the minaret, dome, portal, courtyard, *mihrab* and the *minbar*. The minaret was mentioned several times throughout the questionnaire. The respondents showed concern for the minaret because of its deep level of symbolic value and its role as a landmark (see chapter four). Furthermore, it was realised in the preference question that some of the mosques were mentioned because of their characteristic minarets such as Al-Azhar, Ibn Tulun, Al-Fath and Al-Hakim. The respondents also referred to the dome, which characterises the mosque and enables large spans to be free of any other structural element (see chapter four). This complies with the respondents' regard for the minimisation of the number of columns and structural elements in the mosque, due to their desire to emphasise the mosque as an unusual building, as well as to allow people to visualise the Imam and interact with him while delivering the oration, and to keep the continuation of the prayer rows.

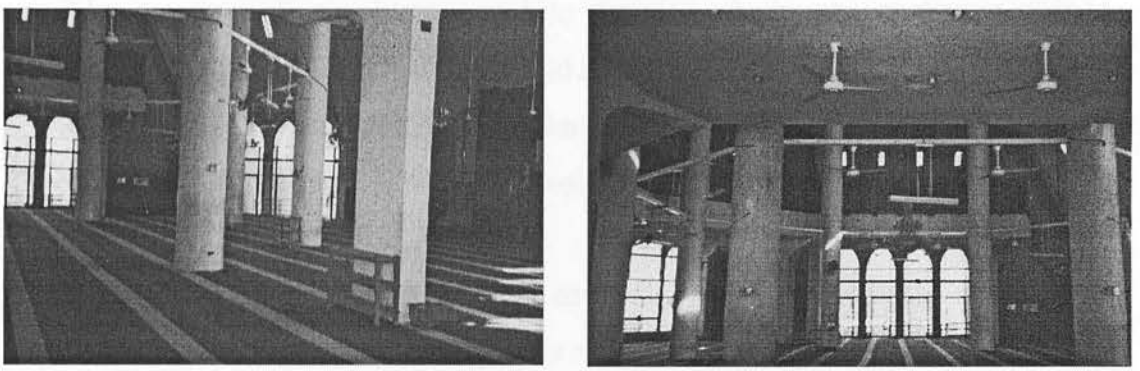


Figure (6-4) The extensive use of columns. Source the researcher.

The courtyard was also named by the respondents. This is related to its climatic role, especially in hot countries. In addition, from a psychological perspective this gives direct access to the sky, with no obstacles. It promotes a feeling of having a direct access to God and a direct link to heaven. This also matches the prototype model, the Prophet's mosque in Al-Madina.

Portals gain their importance from being the first thing seen in the mosque, contributing to the aesthetics of the mosque's façade, giving a good image to the mosque. The *minbars* reflect the talents and the skills of the Muslim manufacturer in producing such outstanding *minbars*. What is worth saying here, is that most of the elements addressed by the respondents were ornaments and contain calligraphic Quranic verses. These elements are aesthetic in nature and enrich the mosque, as well as acting as a reminder

of other historical periods (see chapter four).

In regard to the location of the mosque, respondents revealed a number of surface qualities that should be regarded from their own viewpoint. For example, they mentioned that the mosque should be in a good location, although the word 'good' seems too general, but when referring to their justification the word 'central' might arise instead. The respondents' justification was firstly to be easily observed, secondly to act as a landmark, thirdly to hear prayer call from any place in the neighbourhood, fourthly to provide easy access to the mosque, and finally to encourage people to go to the mosque when they feel it is close to them.

The spaciousness of the location was also brought up by the respondents. It was considered important to build on as large area as possible to serve the maximum possible number of worshippers, while keeping them physically comfortable. Respondents also considered that this would allow the provision of as many utilities and services as possible and would allow the building to be oriented towards *Quibla* direction without constrains. Finally, this would also allow for future extensions.

It was suggested by the respondents that congested locations should be avoided. This was because the mosque may not be readily accessible, and the quietness and the dignity of the mosque may be disturbed, preventing people from praying in quietness, with concentration and devotion. The availability of a good infrastructure around the location of the mosque was also mentioned by the respondents. This included electricity, water and drainage system to maintain the cleanliness of the mosque and its surroundings. This infrastructure was considered essential for contemporary life.

The notion of the surrounding urban pattern was also raised by the participants. They referred to the mosque of Al-Hussein, which is in a very crowded and busy area, with markets, café's and entertainment places spread around it. This gives the area a characteristic style, which attracted people and tourists to the area. Some of the respondents saw this as a negative influence, preferring to have the area surrounding the mosque to be as quiet and clear as possible **(Figure 6-5 and Figure 6-6)**.

An aspect that was suggested by two respondents, was that the mosque should not be surrounded by high rise buildings. The research suggests this is a very important notion in order to avoid distortion of the skyline. This reflects a sense of proportions and aesthetic in these respondents. This also relates to the respectful image of the mosque. At a deep level of understanding this implies that the minaret of the mosque should be the highest point within its surroundings, so as to maintain respected image and dignity of the mosque.

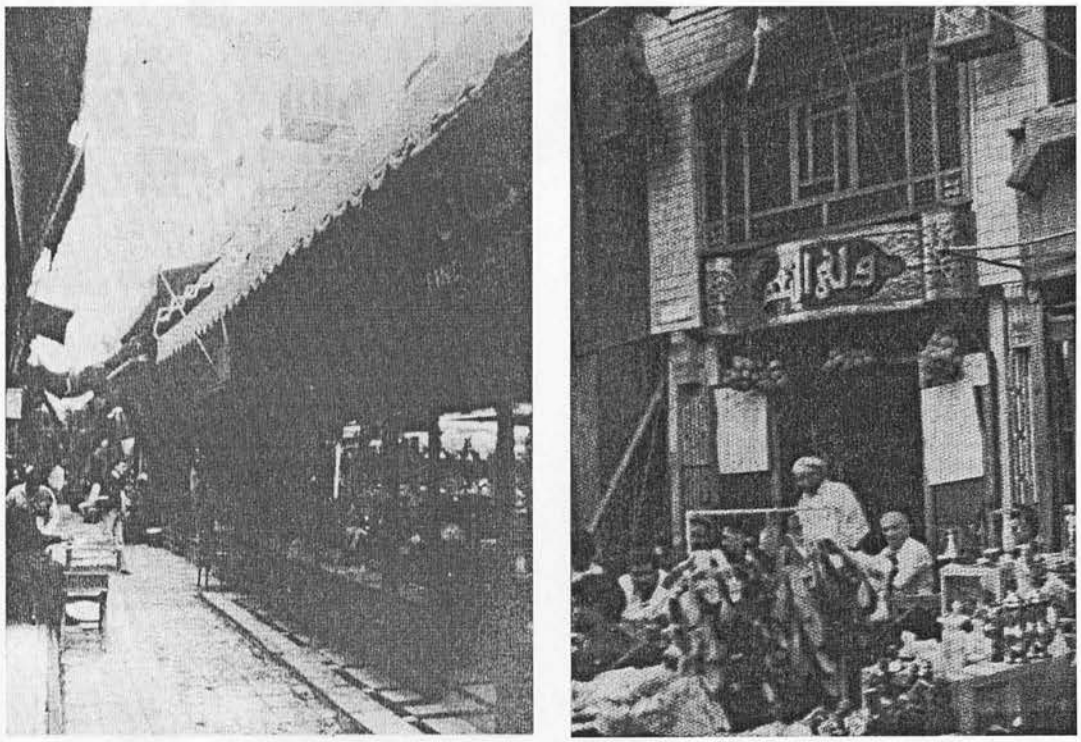
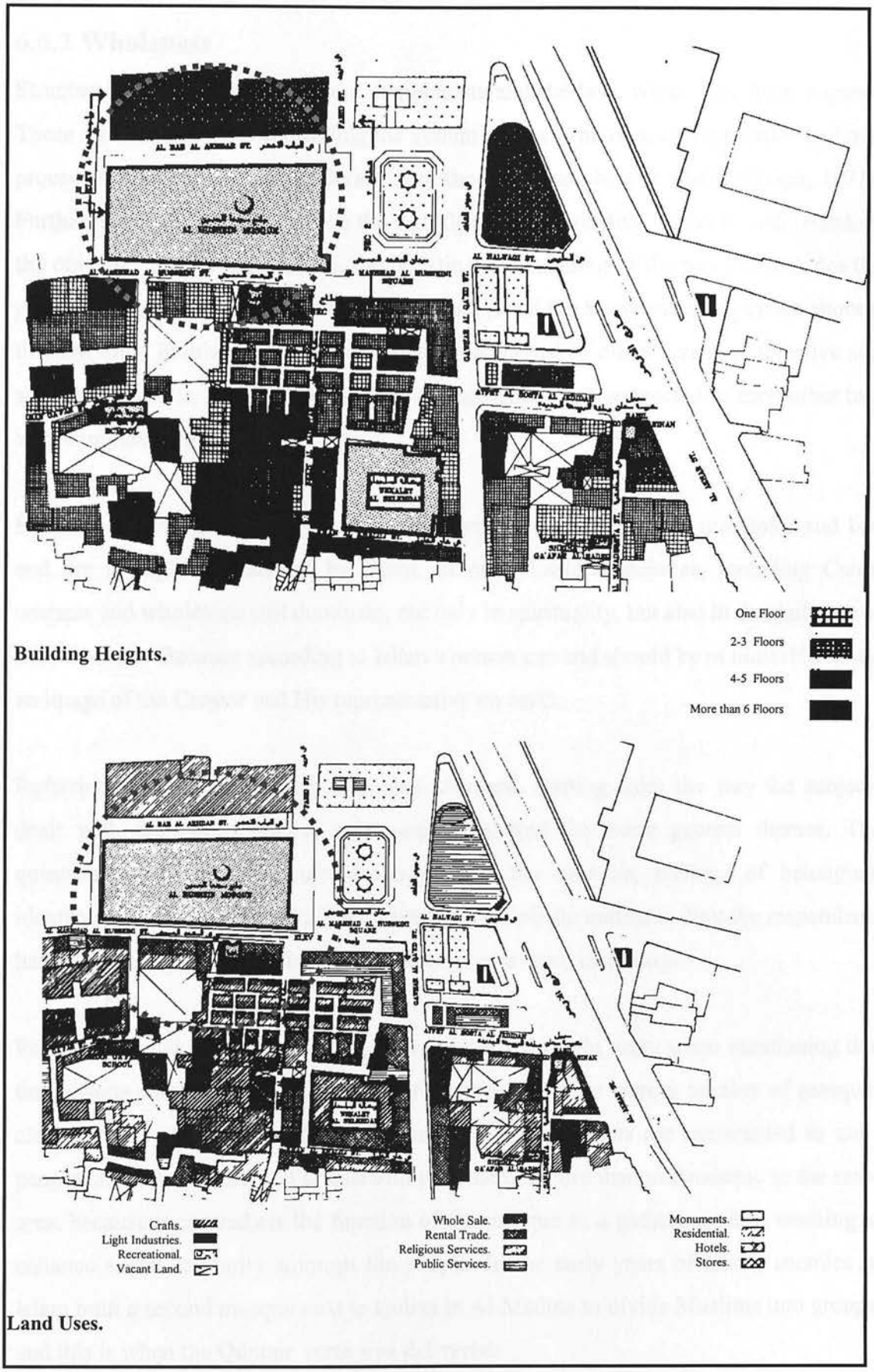


Figure (6-5) Al-Hussein area, showing some of the practised activities. Source (Ibrahim & Mostafa, 1992).



Building Heights.

Land Uses.

Figure (6-6) Two maps showing the area surrounding the mosque of Al-Hussein, which gives an idea about what is meant by the surrounding urban style that was mentioned by the respondents. Source (Ibrahim & Mostafa, 1992).

6.6.2 Wholeness

Structural wholeness relates to the components and the laws which link them together These are the same laws controlling the system's transformation, as the transformational process is a key concept in understanding the whole and how it works (Piaget, 1971). Furthermore, wholeness considers the significance of subjective values in understanding the objective phenomena. Hence, the holistic understanding of the mosque includes the people who use it, the thoughts they have about it and the knowledge they create about it through time. In other words, the mosque is comprised of many layers of objective and subjective aspects, which are embedded in each other, and connected to each other in a very complex structure.

Furthermore wholeness, unity and oneness are the basis of Islamic principles and law and are strongly emphasised by Islam. In most Eastern societies, including Cairo, oneness and wholeness still dominate, not only in spirituality, but also in the daily social life of people. Because according to Islam a person can and should be in himself a unity, an image of the Creator and His representative on earth.

Referring to the questionnaire responses obtained, starting from the way the subjects dealt with the questionnaire, some aspects shared the same general themes. The questionnaire provoked certain feelings about the mosque, feelings of belonging, identity, privacy, tradition etc. This relates to the holistic understanding the respondents had of the mosque, responding to its holistic nature as an institution.

Emphasising the principle of unity, the respondents sought unity when mentioning that the mosque should not be close to other mosques. If there were a number of mosques close to each other, it would disrupt unity. In fact, mosques are constructed to unite people not to divide them. It is unlawful to construct more than one mosque in the same area, because it contradicts the function of the mosque as a gathering place working to enhance social solidarity amongst the people. In the early years of Islam, enemies of Islam built a second mosque next to Qubaa in Al-Madina to divide Muslims into groups, and this is when the Quranic verse was delivered:

"And as for those who put a mosque by way of harm and disbelief and to disunite the believers..."

(The Holy Quran, 9:107)

On another level, the issue of fundamentalism and extremism was mentioned several times throughout the responses. The respondents mentioned that the distribution of the alms' and endowments' money should be supervised by Al-Azhar or the Awqaf, to stop the financing of fundamentalists. This example clarifies the strong link between political, economical and social affairs on one side and the mosque on the other. This emphasises that the mosque is an institution or a whole that embodies different aspects of Muslim life with the religious role being part of this whole.

Discussing the issue of objectivities and subjectivities, a number of examples are found in the responses. For instance, in regard to the architecture of the mosque, there are so many subjective meanings represented in various sentimental and symbolic values. These are reflected on the objective phenomena of the mosque as expressed in its architecture. For example, the respondents recommended spaciousness and large internal height for the prayer hall. This related to the idea of giving monumentality to the mosque and characterising it as an unusual building, reflecting the glory and greatness of Islam. In other words, if the building is spacious and high, the user will have a feeling of awe and respect towards the building. This reflects the feeling that the user is small compared to such a building, full of spiritualities. The user should feel his weakness against such a powerful and meaningful building. This exists almost in all religious buildings, such as the old Pharonic, Greek or Roman temples and churches, and not only in mosques. Another example is the minaret. Respondents considered this to be a landmark highlighting the dignity of the mosque as well as the influence of the different layers of symbolism contained in the minaret, as mentioned earlier in chapter four.

The third example is the notion of separation between wet and dry areas. The dry area is the prayer area. The respondents mentioned this in relation to the fact that the prayer area is usually furnished with carpets. Water spilt onto the carpets, carried over from the ablutions, will give the prayer area non-clean status, will cause bad odours and may negatively affect hygiene. All of this will have negative consequences for worshippers,

causing harm and inconvenience for them. This will be reflected on their piety and devotion, with some even preferring not to come and perhaps going to another mosque. Another aspect mentioned by the participants concerning the ablution areas is their orientation. The designer should consider wind direction to avoid bad odours entering the prayer hall. **These examples highlight the holistic relationship between the objective phenomena and the subjective aspects of the mosque**.

6.6.3 Transformation

As mentioned earlier in chapter two, transformation is the increased complexity of the content. It is an ongoing process of development of the system through time, maintaining and crystallising the structure.

The changes addressed by the respondents can be regarded as evolutionary and transformational. Furthermore, it should be considered that the respondents are influenced by the environment they emerged from, adapting the mosque to its context. It should also be noted that a number of the respondents viewed the historical mosques using today's standards. They did not go back to the time these mosques were built.

The transformation process signifies time. The study emphasises that past and future are present concepts. Some events in the present time could create a mental image of the future. Likewise, a future concern or an incorrect highlighting of the past, might direct to a failure to fully experience the present (Gohar, 1987). Taking this notion into consideration, **the analysis is applied by categorising the responses concerned with the past, present, and future scale** into the following table. This will assist in the interpretation of responses and help to follow the transformation from the respondents' point of view.

Notion	Past	Present	Future	Total
Religious lecturing.	30	32	12	74
Qualified Imams.	12	29	32	73
People meeting	48	1	12	61
Aesthetic.	22	23	11	56
Enlightening people.	9	11	28	48
Spaciousness.	19	12	15	46
Knowledge.	3	17	24	44
Accommodate large number of worshippers.	19	12	13	44
Attracting people to the mosque.	2	18	23	43
Solving community problems.	26	5	11	42
Avoid fundamentalist movements.	-	15	23	38
Significance of Quran & Sunnah.	19	10	8	37
Psychological comfort.	20	5	10	35
Non religious lecturing.	16	13	5	34
Simplicity in ornamentation.	9	17	8	34
Alms giving.	16	10	7	33
Safeguard the Image of Islam.	-	14	19	33
Moral guidance.	12	5	16	33
Weddings & Funerals.	8	15	7	30
Infirmary.	3	8	16	27
Seeking better health for the society.	2	8	16	26
Library.	-	11	15	26
Women prayer area.	-	15	11	26
Bad use of loud speakers.	-	14	8	25
Quietness.	3	14	8	25
Discussing issues.	14	4	6	24
Good location.	14	3	6	23
Open all day.	8	2	13	23
Propagating for Islam (*Da'wa*).	10	2	9	21
Spirituality.	-	8	11	19
Elderly people care.	-	-	18	18
Ventilation.	6	8	4	18
Accessibility.	11	2	5	18
Social cohesion.	9	-	7	16
Mosque development.	5	2	7	14
Islamic advice (*Fatwa*)	5	1	8	14
Begging around the mosque.	6	2	5	13
Orphans care.	-	6	7	13
Entertainment activities.	-	-	13	13
Privacy.	-	7	5	12
Collaboration with Al-Azhar.	-	9	2	11

Speeches about political issues.	5	1	4	10
For the good of the society.	6	3	-	9
Sleeping in the mosque.	3	1	4	8
Army preparation.	7	-	-	7
Nursery for working mothers.	-	2	4	6
Car parking.	-	4	1	5
Judgement.	3	-	1	4
Fairness.	2	-	1	3
Vocational guidance projects.	-	1	2	3
Ruling the state.	2	-	-	2

Table (6-8) The responses classified into past, present and future.

> *"The mosque has transformed coping with the transformation of the Muslim society. It maintained its role to the society in different forms, because each time has its own vision, ideas and thoughts, which evolve from day to day, month to month and year to year. Imam Ali Ibn Abi Taleb once said: Do not oblige your sons to live by your minds ... they have been created for a time that is different from yours."*
>
> (Tantawi, 2000)

Society is always engaged in a process of transformation, and Islam supports the community and its life, encouraging the acquisition knowledge. Because of this, respondents emphasised the significance of an educational role in their responses, being aware that Prophet Mohamed (pbuh) emphasised it in many of his Hadith, for example:

> *"Whoever went on a way seeking knowledge, God will make him an easy way to Paradise"*
>
> (Sunan Al-Termethi– Sakhr, 1991)

and also

> *"The best of Sadaqa (endowment) for a Muslim to learn a knowledge and teach it to his Muslim brother"*
>
> (Sunan Ibn Magah – Sakhr, 1991)

The mosque was known for religious education mainly concerned with the sciences of the Holy Quran and Sunnah, as well as the four schools of Islamic law (see chapter three). The teaching of other disciplines took place in the mosque in the later Islamic

periods. The mosque was a university teaching Religious matters, Arabic, History, Translations, Logic, Philosophy, Astronomy and Mathematics. These sciences were taught in circles in between prayer times (Abdul Fattah, 1979a). The mosque used to be a centre where scholars met and discussed issues related to solutions for certain problems making a religious declaration (*Fatwa*). In addition to the responsibility for people's enlightenment regarding religion and culture. The mosque became the chief cultural and educational institution from the basics through to sophisticated philosophy and popular lectures. Hence, the mosque became a cultural symbol for Muslim society.

The role of the mosque as a teaching institution, was, in time, replaced by specific colleges or schools (*madrasas*), which were often attached to or located near the mosque. In spite of that, nowadays certain mosques are more famous for their university role. For example; Al-Azhar in Cairo, the Qarawiyyin mosque in Fez, and the Zaituniya in Tunis (Hillenbrand, 1985). Al-Azhar is a great Islamic institution that was first built by the Fatimids as a mosque. Subsequently it became a place for teaching religious matters, then the evolutionary process continued until it became a university teaching different disciplines, and people came to study from all around the Muslim world.

Nowadays, teaching in the mosque is confined to light religious disciplines such as the recital of the Quran and Hadith, as well as limited other disciplines mainly concerned with lessons for different school as a service to society. However, education is mostly offered in state schools and universities, which provide modern, pragmatic, and technical training.

An increase in lack of knowledge, especially religious knowledge, was mentioned by the respondents. This was related to a need to enlighten people, in spite of the availability of libraries in some of the contemporary mosques. This lack of religious knowledge allowed the foundation of fundamentalist groups and terrorists having Islam as a cover for their terrorist actions. Thus, the need for qualified Imams and Sheikhs increased. These individuals have to pay more attention to this vital issue and make more effort in creating an awareness of Islam, protecting the image of Islam from these negative accusations. This could, initially, be prevented by *Da'wa* (propagating the teachings of Islam) to enable people to judge what complies with Islam and what does not.

Obviously, the notion of terrorism under the cover of Islam is new, thus all of the problems mentioned by respondents are considered to be a new role for the mosque. This is a kind of transformation to the mosque as seen in **(Table 6-8)**.

Historically, the Imam was chosen precisely, sometimes the Imam was the Caliph or the leader himself. According to today's circumstances and standards some Imams are not qualified or highly educated. In some areas people just choose the Imam as one of the residents, presuming that he is aware of religious matters, which might not be the case. This is where the role of Al-Azhar and the Awqaf arises, as it is suggested to have all mosques under their supervision, consequently Imams would be approved by them according to their qualifications. As mentioned earlier, this was verified by Sheikh Mohamed Tantawi the Sheikh Al-Azhar.

Respondents were also concerned about the means by which money reaches such fundamentalist and extremist groups through the alms and endowments of the Muslims. This was discussed by the respondents, stressing the role of Al-Azhar (as the highest religious authority in the country) or the Awqaf, claiming that if they supervised such alms, this would prevent the money reaching the fundamentalists, with the money instead going to the people in real need.

> *"The mosque functioned as an indicator of the social and the political conditions in Cairo"*
>
> (Awad, 2000)

Compared to the past, the frequency of people meeting at the mosque has decreased. This reflects the nature of the relationship between the contemporary mosque and society. In the past mosques were of the main aspects of social life in the city of Cairo. Being a centre of an everyday life, people went to the mosque not only to pray, but also to discuss general matters and solve their society and individual problems. This obviously created very strong relationships between people and created a sense of unity and belonging to each other and to the mosque, this in turn attracted more people to the mosque. Today, people might meet only in Friday prayers or for special events such as feasts (Eid Al-Fitr and Eid Al-Adha). The respondents believed quite strongly that people should meet more frequent in the mosque, suggesting that this could be achieved

if the mosque could organise events or celebrations to bring Muslims to the mosque. These formal and informal activities are important to fill the mosque with Muslims at all times.

This aspect can also be interpreted in terms of the strength of social cohesion (expressed in the high frequency **(Table 6-7)**) which has wide implications on the well being of society. Although recently there has been an increase in the number of facilities due to population growth. For example the number of mosques that contain infirmaries has increased, and there are now a number of facilities that were not available before such as vocational guidance projects to help teenagers learn a profession. Another new facility found in some mosques is a nursery for working mothers. Another popular service now provided by the mosque is a multi-purpose hall used for weddings and funerals.

Another issue mentioned by the respondents related to opening times of the mosque. Previously the mosque was open throughout the day. However, for political reasons, today it is open only at scheduled prayers times. If someone arrives late, he is not allowed in, and therefore, cannot perform his prayers.

Respondents were also concerned by the contemporary negative phenomena of people begging around the mosque. This has a negative affect on the image of the mosque, especially historical mosques, which attract large numbers of tourists. This may be the reason why a high frequency of elements was seen in the 'past' columns, in that respondents view the historical mosque from today's perspective. Most of the new mosques have staff responsible for preventing this phenomenon. Generally, this is bad for the mosque and for the image of Islam.

Another phenomenon is noise caused by the use of loud speakers by some of the mosque staff, thinking it is good for Islam to spread the words of God. However, this is not a suitable way to do this, and may cause people to hate the mosque as a source of disturbance.

Another important issue for respondents was a desire to create new roles for the mosque, such as taking care of elderly people by attaching a house for them to the mosque. In

fact, a number of such houses are already available, but are not supervised by the mosque. Respondents felt that if these houses were supervised by the mosque, they could trust the level of care provided and the system may work better financial reasons. A number of people also suggested including entertainment activities, to encourage teenagers to go to the mosque. This may be a good idea, as long as such activities do not contradict with Islam and do not cause any harm to the worshippers in the mosque, and allow them to perform their prayers with concentration and devotion.

A further important issue is the political role of the mosque. Historically the state was ruled from the mosque, and it was used as a centre for discussing political issues and in reaching decisions concerning allies and enemies. The mosque (Al-Azhar Mosque in particular) has also been a source of inspiration for patriots and leaders throughout the Egyptian history (see chapter five). Finally, orations and speeches were held in the mosque to create awareness of political conditions. This expressed the close relationship between the mosque and politics. The mosque served as a mark of legitimacy. The oration was the fastest way to inform the populace of any messages from the ruler (Hillenbrand, 1985). This role was transformed after the separation of the mosque and the political authority, and this had important implications on the nature and typology of the mosque and for architecture in general.

Architecturally, the mosque has developed by an organic process of improvement. This has occurred through time, reflecting life, culture and society. In a historical sense, the mosque is a record of every day life and adaptation within society.

When participants mentioned simplicity they were mainly thinking of medieval mosque architecture. This was a period which witnessed an architectural progress evident in the variety and creativity that characterised all architectural elements, including elevations, minarets, domes, etc. (see chapter five). However, it should be considered that the rulers and their architectural accomplishments reflect more their intention of glorifying their own names, disregarding the Islamic context.

The aspect of the location was addressed by respondents as part of the mosque's transformation. It is clearly seen in **(Table 6-8)** that the location of the historical

mosques was precisely selected. Some of these mosques were built in the centre of the city, with the rest of the city being constructed around them. According to today's standards the location of most mosques does not attract the same level of consideration. This is related to the transformation which took place in society, also reflected in urban planning. This notion may be reflected in the frequency of elements relating to the 'future'. Some of the respondents hoped that the location of the mosque may become as important as in the past. Others were aware of the problematic nature of such a notion, being aware of the difficulties involved in finding such spacious areas in the congested city centre. However, it was suggested that this could be applied in newly built cities.

All of the objective and subjective aspects mentioned by respondents could be interpreted by considering that all people are influenced by the positive aspects of the past and the present. This acts like a source of inspiration for them to express their aspirations for the future. Such aspirations can be clearly seen in the 'future' column of **(Table 6-8).** Wishing to restore the declining role of the mosque and combat ignorance, problems of social cohesion, fundamentalist movements, and to encourage the propagation of Islam (*Da'wa*). This implies that people feel the need for the mosque to interact with society and to have a wider role in society, going beyond its use as a place of worship and prayer.

6.6.4 Self-regulation

A structure is governed from within, adapting itself to change in order to reproduce itself and to maintain a relatively ordered and stable state. In such a way, the units of structure are regulated by the system itself. Through self-regulation, the system merges the process of change and stability. Self-regulating systems can create their own controls, which are continuously changing with the system, applying explicit rules responsible for the existence of the structure, Self regulation can be classified as a form of conservation, within stable boundaries. However, it can also involve the construction of new elements. Self-regulation can be achieved by a diversity of procedures and processes, which could be ranked in order of increasing complexity (Piaget, 1971). Finally, self-regulation combines the laws of formation and transformation.

Tracing the transformation of the mosque, one can see that it has continued to fulfil its

role in Muslim society, in spite of the changes which occurred over the years. For example, historically the mosque was a meeting place for discussing issues. It was a centre of intellectuality. Today, the mosque still plays a vital role in society, but in a way that complies with the current needs of society. Examples of facilities provided by the mosque which were mentioned by respondents include infirmaries, to help poor people who cannot afford to go to hospitals, nurseries for working mothers, multi-purpose halls for weddings and funerals, and vocational guidance centres to help teenagers learn a profession (see **Table 6-8**). Thus, it can be concluded that the mosque is a self-regulated system that has maintained its role in society throughout its transformation.

Prior to the separation of politics and the mosque, the state was ruled from the mosque. However, the mosque continued to play its role in the political life of society, in a way that complied with contemporary circumstances. This link is evidenced by many events which have happened over the history of Egypt. For example, resistance against foreign occupation started from mosques, mainly Al-Azhar. During the war of (1956 AD) President Nasser addressed his people from the mosque. Formal religious ceremonies are held in the mosque, attended by officials of the government. Current President Mubarak, the political symbol of the country, is keen to perform the Eid and some Friday prayers in the mosque with the people. All this reflects that the mosque self-regulated its political role in society, thus maintaining its significance to the people (Awad, 2000).

Historically, education was conducted in the mosque. This role took two parallel lines, the physicality of education and the supervision and guidance of education. Today, it cannot be assumed that the mosque will fulfil this role along the same lines. For instance the mosque could not accommodate thousands of university students. However, to achieve this the mosque could maintain its role in guiding education without being the physical site for its delivery. This is like the sun, we can see it, we can sense its heat but would never touch it. This can be seen in the case of Al-Azhar University. Where the mosque's influence is clearly evident throughout its different colleges, and campuses. Thousands of students gain the benefit of this precious seed, planted by Al-Azhar. This again verifies the self-regulating nature of the mosque (Awad, 2000).

6.6.5 Hierarchy

Structuralism reveals the hidden dimension that brings order to everything. Structuralism attempts to discover the order beyond different phenomena. That is the order responsible for the reproduction, reconstruction and reorganisation of these phenomena. Hierarchy is not a fixed property of a structure, but a process in which the components change and interact responding to their regrouping. It is the ordered relation of connected parts to make a whole. This relationship has been described using a classification of ranking and sub-ordination schemes. Hierarchy is concerned with the relationship between different levels of complexity. It describes what generates the levels, separates them and links them. Hierarchy controls the interfaces between levels.

The hierarchy of the mosque can be seen from different perspectives. For instance, there is a hierarchy in its role as an institution (e.g. social, educational, cultural etc.) and this is to do with the transformational process. There is also a hierarchy in the expression of the principles of Islam (e.g. unity, equality etc.). In addition to the hierarchy that exists in the physical elements of the mosque as a building in terms of their significance, and this is to do with the surface appearance and the deep meanings.

For example, some architectural elements mentioned by the respondents, i.e. courtyard and minaret, were reflected on the influence of the mosque on the urban fabric, as expressed by the respondents in their concern for the mosques' location. Furthermore these elements emerged from the needs of society, whether physical or non-physical. This was identified through the different roles the mosque plays in society as was mentioned by the respondents i.e. the social, educational, political etc. This is reflected on improved well being of the whole of society and on the way this society is seen by other societies. This notion was labelled by the respondents, as the respect and dignity of the mosque. One can identify the hierarchy, starting with the architectural elements and ending with the well being of the society.

Spaciousness was also mentioned by the respondents, seeking the accommodation of a large number of worshippers. This will lead to the increase of the social interaction between them, which, in turn, will lead to social coherence of the whole community. Hence, fulfilling the Islamic principles of community and unity between the whole

Ummah as one strong body.

<table>
<tr><td>Imam</td><td rowspan="4">Education - knowledge</td><td rowspan="4">Enlightenment</td><td rowspan="4">Avoid wrong ideas</td><td rowspan="4">Avoid heterodoxy & extremism</td><td rowspan="17">Societal well being & development</td></tr>
<tr><td>Lectures</td></tr>
<tr><td>Fatwa</td></tr>
<tr><td>Library</td></tr>
<tr><td>Good location</td><td>Accessibility</td><td rowspan="3">Accommodate large numbers</td><td rowspan="6">Social coherence</td><td rowspan="6">Unity</td></tr>
<tr><td colspan="2">Spaciousness</td></tr>
<tr><td colspan="2">Future extension</td></tr>
<tr><td colspan="2">Social hall</td><td>Celebrations</td></tr>
<tr><td colspan="2">Free spans</td><td>Continuity of rows</td></tr>
<tr><td>Alms</td><td>Helping poor</td><td>Equality</td></tr>
<tr><td>Ablution places</td><td colspan="2">purity</td><td rowspan="2">Hygiene</td><td rowspan="2">Physical comfort</td><td rowspan="2">Psychological comfort</td><td rowspan="2">concentration</td><td rowspan="2">devotion</td><td rowspan="2">Spirituality</td></tr>
<tr><td>ventilation</td><td>cleanliness</td><td>Avoid bad smells</td></tr>
<tr><td colspan="3">Society needs</td><td>Architectural elements</td><td colspan="3">Mosque influence on urban fabric</td></tr>
<tr><td colspan="3">Vocational guidance</td><td>training</td><td>production</td><td colspan="3">Economic improvement</td></tr>
</table>

Table (6-9) Some responses classified into a hierarchical order.

From the education point of view, education started with lessons in Quran and Sunnah and was gradually developed to include different disciplines of knowledge. This contributed to the enlightenment of the whole society. In this way, education in the mosque increased in complexity and elevated its place in the hierarchy of Muslim society. This is why the mosque impacts on every aspect of Muslim society, i.e. urban

structure, spatial organisation, thoughts, intellectuality etc. Hence, the place of the mosque in Muslim society is super-ordinate.

A defect in the above noted hierarchy could compromise the integrity of the system. For example, the respondents named the aspect of qualified Imams a number of times. Being responsible for religious education and the enlightenment of society, their role would be in making critical issues clear to avoid any confusion, heterodoxy or the spread of extreme ideas. Such confusion created a significant gap between the authentic principles of Islam and misinterpretations promoted by fractions. This enabled fundamentalist groups to grow, attracting easily influenced and poorly informed individuals to them. On a higher level the damage caused by these groups created many problems for society as a whole. Problems emerged on different levels of the hierarchy, starting from the enlightenment of the individual to the enlightenment of the society.

Table (6-9) above shows a sample of the responses arranged in a hierarchical order.

6.6.6 Laws of composition

The relationship between the components of a structure is governed by particular laws, which also govern the transformation of systems. These laws apply to the mosque as a system of transformation, in which case they govern the sustenance of the mosque, its definition, its role and its meaning. This parallels the genotype / phenotype analogy, knowing that the genotype is the idea or the concept responsible for the production of the phenotype which is the physical representation of such an idea.

The first mosques built in Cairo are not the same as a contemporary mosque. As illustrated earlier a process of transformation has taken place. However, there are common principles between the first and the contemporary mosques. It is not about a building but about the structure as a whole. The mosque as an institution is a structure, and as a building is the expression of an idea. This idea has laws of composition, which are responsible for the reproduction of this institution.

Throughout the present study, it has been clear that there are some fixed aspects and some transformable aspects. Fixed aspects include the principle of Islam (unity,

equality, community, orientation towards *Kaaba* etc.) (see chapter three). Examples of the transformable aspects named by the respondents include education, guidance, symbolisation, spritiualities, psychological care, social care, helping people in need, tall / short minarets, *Riwaq* / *Iwan* typologies. These aspects have been fulfilled by the mosque throughout history (see part two). All of these aspects can be seen from the evolutionary point of view as forces, collectively generating the genetic structure of the mosque. Therefore, all of these ingredients can be brought together to form the seed of the reproduction of the mosque.

Respondents mentioned a number of architectural elements such as the courtyards, the minaret, the dome etc. These were mentioned because of their significance as principal components of the mosque, which in turn relates to the layers of meanings and symbolism they signify. To know these meanings is to know the history of how these elements and features have evolved and how they have become ordered into an overall structure of the mosque. Hence, the transformation of these elements, as surface structure, together with their meanings, as deep structure, produce the laws of composition of such phenomenon. That was clear in the survey that people chose specific mosques or architectural elements because of their historical, traditional, social and cultural value. This includes the mosques of Al-Azhar, Al-Hussein, Mohamed Ali, Al-Noor and Mostafa Mahmoud.

It is realised that these mosques include both historic and contemporary mosques. The reasons behind respondents referring to the historic mosques can be summarised by three factors. First because it had satisfied their needs and second because it reflects their history and way of living, or heritage. In other words, to them, the historic mosques are authentic, and basically authenticity is about the ability to recognise what is genuine and honest. Thirdly a number of the mentioned mosque are associated with a great Muslim person such as Al-Hussein Al-Sayyida Zeinab, Al-Sayyida Nafisa and Al-Sayyida Aisha. The significance of this is that they are all members of the Prophet's family. Having this in mind always creates a special feeling of significance and spirituality to the place. That is why people from all over the country headed to these mosques for spiritual reasons.

Contemporary mosques are popular for their architectural style, strategic location and their service to society. However, each mosque has its own particular attractions such as the good location of Al-Noor, the minaret of Al-Fath, and association with a great Muslim such as Mostafa Mahmoud, a contemporary Muslim philosopher.

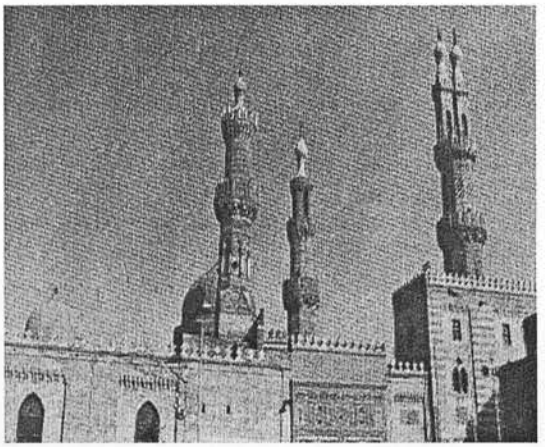
Table (6-10) below shows a sample of the responses given for the mosques named in the 'most liked' question together with their reasons.

Status	Mosques	Freq.	Reasons	Freq.
Historical Mosques	Al-Azhar.	29	- Educational.	15
			- Heritage.	12
			- Qualified Imam.	7
			- Historical values.	5
			- Attracting people from all over the world.	3
			- Characteristic minaret.	2
			- Courtyard.	2
			- Spacious.	2
			- High spirituality	1
			- Psychological Comfort.	1
	Al-Hussein.	26	- Associated with Great Muslim person.	16
			- High spirituality.	9
			- Psychological comfort.	6
			- Heritage.	5
			- Surrounding urban style.	3
			- Includes mausoleum.	3
			- Spacious.	2
			- Attracting people from all over the country.	2
			- Educational.	1
			- Strategic location.	1
			- Personal memories.	1
	Al-Sayyida Zeinab.	22	- Associated with Great Muslim person.	14
			- High spirituality.	10
			- Psychological comfort.	7
			- Good design.	5
			- Attracting people from all over the country.	4
			- Religious ceremonies.	3
			- Includes Mausoleum.	2
			- Serving the society.	2
			- Strategic location.	1
			- Spacious.	1
			- Qualified Imam.	1

	Ahmed Ibn Tulun.	15	- Characteristic minaret. - Good design. - The courtyard. - Spacious. - Special historical values. - Strategic location.	11 8 5 2 1 1
	Mohamed Ali.	12	- Heritage. - Strategic location. - Domes. - Outstanding ornaments and decoration. - Minarets. - Historical values. - Spacious.	7 6 5 3 3 1 1
Contemporary Mosques	Al-Noor.	24	- Good design. - Strategic location. - Religious ceremonies. - Serving the society. - Dome. - Spacious. - Modern technology.	11 9 8 5 3 2 2
	Al-Fath	21	- Characteristic minaret. - Strategic location. - Spacious. - Good design. - Domes. - Modern technology.	15 11 7 3 1 1
	Mostafa Mahmoud.	15	- Associated with Great Muslim person. - Serving the society. - Strategic location. - Good design. - Modern technology.	12 9 5 3 2
	Al-Zahraa.	8	- Strategic location. - Good design - Minaret. - Modern technology.	6 4 3 1

Table (6-10) A sample showing the liked mosques with the mentioned reasons.

The present research suggests that reasons for particular mosques being popular are part of the genetic structure or the laws of composition of the mosque. This supports one of the main ideas of the present research as discussed in part two.



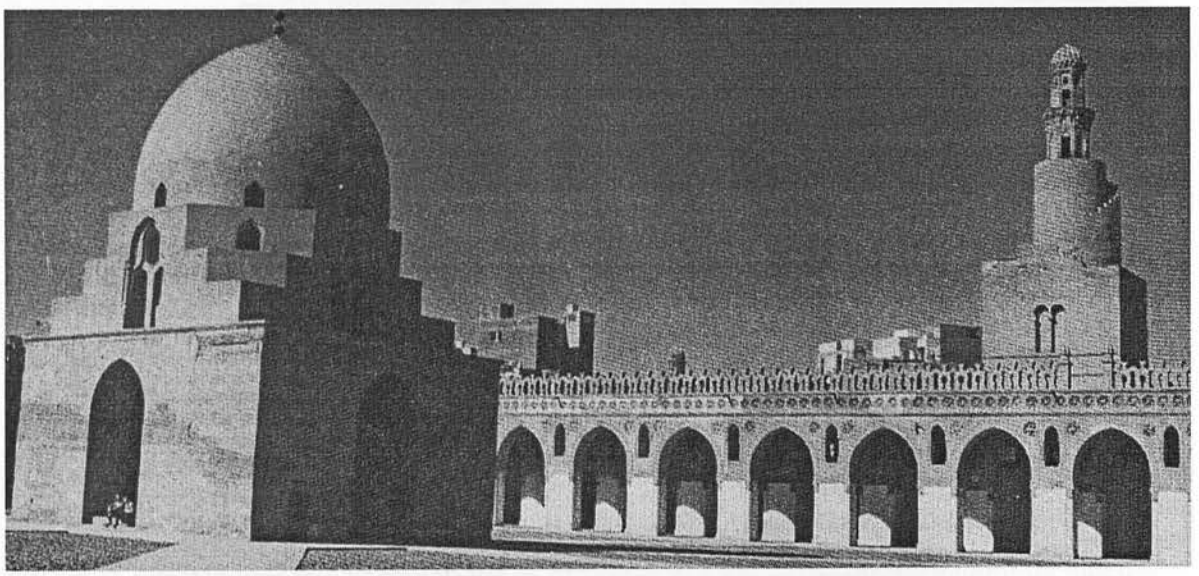


Figure (6-7) Some of the historical mosques. (Upper Left) Al-Hussein. Source (Kirikou, 2003). (Upper Right) Al-Azhar. Source (Ibrahim & Mostafa, 1992). (Middle Left) Mohamed Ali Source (Ibrahim & Mostafa, 1992). (Middle Right) Al-Sayyida Zeinab. Source (SIS, 2003). (Bottom) Ahmed Ibn Tulun. Source (Ibrahim & Mostafa, 1992).

Figure (6-8) Some of the contemporary mosques. (Upper Left) Al-Fath. (Upper Right) Mostafa Mahmoud. (Lower Left) Al-Zahraa. (Lower Right) Al-Noor. (Bottom) Ahmed Ibn Tulun. Source the researcher.

6.7 Conclusion

The current research applied two methods of data collection, open-ended questionnaires and semi-structured interviews. The aim of the questionnaire was to examine Muslims' attitudes, experiences and expectations of mosques in Cairo. The questionnaire included fourteen questions functioning as a mechanism to provoke ideas, and encourage respondents to address a deeper context. The sample was diversified to include various ages, genders, educational status, occupations, residential locations, length of stay at

residence and socio-economic status. The valid sample included fifty-four cases.

The responses were piled prior to analysis, which adopted a structuralist methodology of interpretation, rather than using standard statistical tests. Accordingly, the analysis was classified in regard to the concepts of structuralism, including surface structure / deep structure, wholeness, transformation, self-regulation, hierarchy and laws of composition.

The strong support of the respondents fore the study is quite clear from the lengthy and sincere pattern of their responses as well as their praise of the work. Respondents expecting that this study would be beneficial for mosques in general and the Cairene mosque in particular. This indicates the extent to which people love the mosque and truly wish that it should be manifested in a way which reflects the noble status of Islam and Prophet Mohamed (pbuh). Islam represents a way of living and is not only a form of worship. This was reflected in the mosque as an institution that plays an important role in society far beyond being just a place for worship. Respondents perceived and dealt with the mosque from this particular point of view. There are so many embedded feelings towards the mosque including feelings of belonging, identity, privacy etc. Respondents were aware of the subjective aspects of the mosque not only the objective, highlighting the holistic nature of the mosque. For this reason, symbolical, psychological, cultural, educational and sociological notions were addressed throughout the study.

The analysis uncovered several important issues. These all relate to the role of the mosque, as an institution, in Muslim society. The findings come from people's experience and can be summarised as follows:

- The mosque is understood within the total context of Islamic rituals and Muslim communal life. The mosque emphasises the character of Islam, joins together the secular and the sacred, and expresses them by means of a unified doctrine. It is deeply involved in the life of the Muslim society. It has a very significant role, which is far beyond its religious function, it is a centre of social, cultural, intellectual and educational activities, playing this vital role in the development and transformation of society.

- The responses reflected the surface structure and the deep structure of the mosque in different aspects. For example, the minaret, at its surface level, is used to announce the call for prayers, it was the tallest structure in the city and dominated the skyline. In its deep level it was a focal point of reference and a visual landmark, and in addition contains multiple layers of symbolic meaning (see chapter four).

- The mosque was the focal point of society, today it is dependent on the city. To restore its important role there are some rules that should be followed in order to restore the location of the mosque in terms of its centrality, spaciousness and its architectural design responding to the surface level. Responding to the deep level, one should consider the centrality of the role of the mosque as being the heart of society. This should be considered while planning new cities.

- Major notions that were of particular significance to the respondents include the image of the mosque and reasons behind this image. This also parallels the surface structure / deep structure methodology. Respondents emphasised the significance of the social and cultural dimensions and their representation into the physical features of the mosque.

- The role of the mosque is illustrated by the values of its objective and subjective features. These features have passed through a process of transformation and are more than the summation of its physical characteristics, which are landmarks for the values and traditions of Islam.

- The transformation of the role of the mosque has followed the transformation of society through time. Respondents were aware of the transformation of the mosque and were able, to a great extent, to make a distinction between the historical and the contemporary roles of the mosque. Furthermore, respondents showed concern for sustaining its future by forwarding suggestions for future role of the mosque.

- Continuity and transformation of the mosque, through time and over generations, enabled the sustainability of the systematic interaction between people and the

mosque. The development of this interaction was reflected by people's ability to understand certain events and the knowledge is the result of this transformation.

- The mosque fulfilled its role to Muslim society through its transformation, adapting itself to the changes occurring in society. The different roles of the mosque are continuously changing with the mosque, which in turn regulates them. Hence, it can be claimed that the mosque is a self-regulated system of transformation. The mosque's self-regulation is effected by a diversity of procedures and processes, which could be ranked in order of increasing complexity.

- Analysis revealed that there is a hierarchy of layers of hidden dimensions and symbolism, which suggests an ordered relationship of different physical parts and non-physical aspects in the mosque as a whole. Such an ordered relationship produced a certain action of ranking, which lead to a characterised classification. This relationship is also responsible for the reproduction of the mosque, which is shown to be true through the transformation of the mosque applied in this survey through the past, present, future scale.

- There are many unwritten rules and traditions, which cannot be ignored. These rules are the accumulated traditions, norms and associated symbols, these are the genotype of the mosque. These rules played a major role in giving the final form, the phenotype, the aesthetic and the identity of the mosque.

- People's needs and desires should be regarded in planning for the future. People are generally very attached to their cultural heritage, and this could be achieved by considering the transformation of the mosque and its adaptation to societies' needs.

CHAPTER SEVEN

CONCLUSION

7

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CONCLUSION

7.1 Overview of the Thesis

The conclusion represents the understanding obtained through the current research, from the application of a theoretical discourse based on the concepts of structuralism. This approach has emphasised the distinction between deep structure and surface structure; as well as transformation. The principles of Islam and the empirical work conducted also play a vital role in shaping the conclusion.

The overall view expressed in the research is that the mosque is not an aggregation of physical objects, it is a structure in which people's thoughts, cultural knowledge, language, behaviour and hopes are strongly integrated in a holistic manner.

This thesis attempted to **open up a theoretical discourse aimed at providing a new way of understanding based on a number of philosophical attitudes brought together in a holistic form.** This understanding is believed to influence the way people see the mosque and maintain its role. There has been substantial physical fragmentation and extensive interest in the study of the mosque as a building from an objective point of view, with little consideration to its role as an institution. The mosque is an institution that has various roles in society, i.e. social, cultural, educational, political etc. in addition to its religious role. The present thesis has attempted to show this role and has outlined a method of studying the mosque that is more holistic, recognising that people are connected to their environment through the meanings and symbolic associations they develop in the process of living and adapting their environment. Thus, such meanings cannot be limited to appearance or visual features. The mosque does not lie at the surface, but is to be found in deeply held attitudes and principles underlying

the process of its transformation, which is highly integrated with society. It was therefore decided that the research should explore these underlying principles adopting a holistic approach.

The postulate of chapter two is that unity is one of the main principles of Islam. It is strongly related to the western philosophy of holism, the major base from which the theoretical framework for the present research emerged. Both concepts imply that the whole is not an aggregation of the parts, but is the ordered composition of such parts through a process of transformation. 'General Systems Theory' is often used by researchers as an epistemology to deal with the ontology of 'Holism'. 'General Systems Theory' could not fully identify the mosque under either of its concepts or patterns suggested in this research, mainly because of the dynamic nature of the mosque, and additionally this theory does not address the parameter of time. This emphasised the need to introduce the ideas of 'Structuralism' which provide an understanding of the transformation of phenomena, varying from surface appearance to deep symbolic structure. 'Structuralism' emphasises the importance of understanding the history of a phenomenon and how it evolves with the evolution of society while maintaining its core identity.

The study discussed a number of concepts connected with structuralism to facilitate an understanding of how it operates. These concepts included: the time parameter; the process of transformation; holistic nature between subjectivities and objectivities; order and hierarchy; surface structure and deep structure; self-regulation and finally the rules of composing a structure, which are responsible for producing the structure in the future, otherwise identified as the genotype.

Chapter three introduced Islam as a religion, legal system and culture. It is a religion for all people at all times that was delivered, preached and explained by Prophet Mohamed (peace be upon him). Islam is about **peace**, in fact it is derived from the Arabic root word ***Silm*** meaning peace. Peace is an important principle contributed by Islam through its philosophy. Prayer has exceptional weight in Islam, being one of its five pillars strengthening the link between the Muslim and God - performed five times a day. This highlights the religious significance of the mosque, in addition to its significance as an institution.

Islam gave rise to a number of essential principles that are respected and followed by Muslims. These principles include unity, equality, co-operation, sense of community, solidarity, enlightenment and knowledge, obedience, honesty, spirituality and tranquillity, purity, and nature. These principles have all driven the design and placement of the mosque within the Muslim community.

Part Two, which comprises chapters four and five, studied the mosque with reference to this theoretical model. It established existential links between the subjective characteristics of the mosque and their objective representation. Next, it employed a diachronic analysis to understand the process of transformation experienced by the Cairene mosque through history to the present day.

To back up the suggested approach with empirical research, as described in part three of the thesis, a qualitative open-ended survey was formulated and used to measure people's personal evaluations of the role of the Cairene mosque. The outcome of the survey fully supported the theoretical model.

7.2 The Findings

The findings of the present research emerge from both its theoretical and empirical aspects. The aim of this section is to discuss the findings coming from the application of the theoretical framework to the mosque, based on the philosophical discourse and Islamic principles. In other words to **provide a holistic deeper understanding of the mosque**. The mosque is a phenomenon that is not static, it is an institution that has its roots deeply embedded in all aspects of Muslim society, follows its social transformation and maintains its laws of composition. However, it should be noted that this is not a comprehensive study that addressed every single aspect of the mosque. It is rather an attempt to illustrate the application of such theoretical discourse, make distinction between surface structure and what is beneath the surface, and the transformation of the phenomenon. Assuming that the same methodology will apply to all mosques, or even to other institutions.

The mosque is not only a place of worship, it serves as a social node and fulfils cultural, intellectual, educational, and political roles. It is a landmark of any Muslim society. It

has symbolic and functional meaning, which reflect the society and its different needs. The mosque is part of the society and entirely integrated within it.

It was observed throughout the study that one of the most influential parameters affecting the role of the mosque across different eras was the relation between the mosque, society and state. The stronger the relation is, the more influential the mosque is, and the better the state of society. The best example of this comes from the early Islamic period, when the mosque held authority, and Muslim State flourished and expanded worldwide. Another case is the period of Ottoman rule which was accompanied by secularisation spread and domination, with the state taking over the responsibilities of the mosque. At that time, the mosque self-regulated itself and maintained its political role in society. People sought refuge in mosques and initiated their revolts against the Ottoman rulers' brutality from them. Another successful example comes from Egypt's resistance against foreign occupation, where the Egyptian people, together with patriot statesmen were in close contact with the mosque, and were able to expel the invaders. A different case is seen in the 1950's when the (1956 AD) Trio-attack took place. President Nasser, the Head of State, chose to address his people from the mosque, knowing the influence of the mosque on the Egyptian people.

President Mubarak, the political symbol of the state, attends Al-Azhar major religious celebrations, and personally hands presents to religious competition winners.

A recent negative aspect comes from terrorist offences resulting from a failure in the enlightening role of the mosque.

The above examples confirm that in order to improve the standards of living and develop the society on sound basis the relationship between the three parts should be strong.

The study of the mosque as a structure was carried out on two levels. First, relating the objective phenomena of the mosque expressed in its architectural and urban contexts (surface structure), to its subjective meanings as represented in various cultural, sentimental and symbolic values (deep structure). Second, using diachronic analysis to trace the transformation of the mosque with respect to the socio-cultural aspects of the

Cairene society.

Building on Ardalan's words (1983), that mosques have a common Islamic language but with multiple different dialects, cultures, and ecologies. This suggests that the best approach to study the mosque is one that recognises the transformation of its sustained deep structure, potential development and self-regulation. Throughout history the mosque has maintained certain characteristics which became inherited in its genesis and cannot be ignored. The research suggests that these rules are responsible for the reproduction of the mosque as an institution. It is not a matter of copying, disregarding the concept of transformation, but is about increasing the richness and complexity of the system. **The study concluded that the mosque is system of transformation, and suggests that there is a hierarchy of three levels of forces underlying mosque design. First the eternal unchangeable principles, second the symbolic meanings, and third the contextual transformations**, knowing that the eternal principles acts as a base that guides the symbolic meanings and the contextual transformation **(Figure 7-1)**.

Chapter three introduced the principles of Islam. They are re-examined here to shed light on the role of the mosque in nurturing and disseminating these principles, as well as in understanding their implications for the organisation and design of the mosque. The following section is meant to provide inspiration for architects and designers in considering these three levels of forces, and freely reflecting them in their designs within the limits of existing laws of composition. It is not meant to set rigid design guidelines, because such rigidity is contrary the idea of the freedom of expression, and contextual differences. These levels are discussed below.

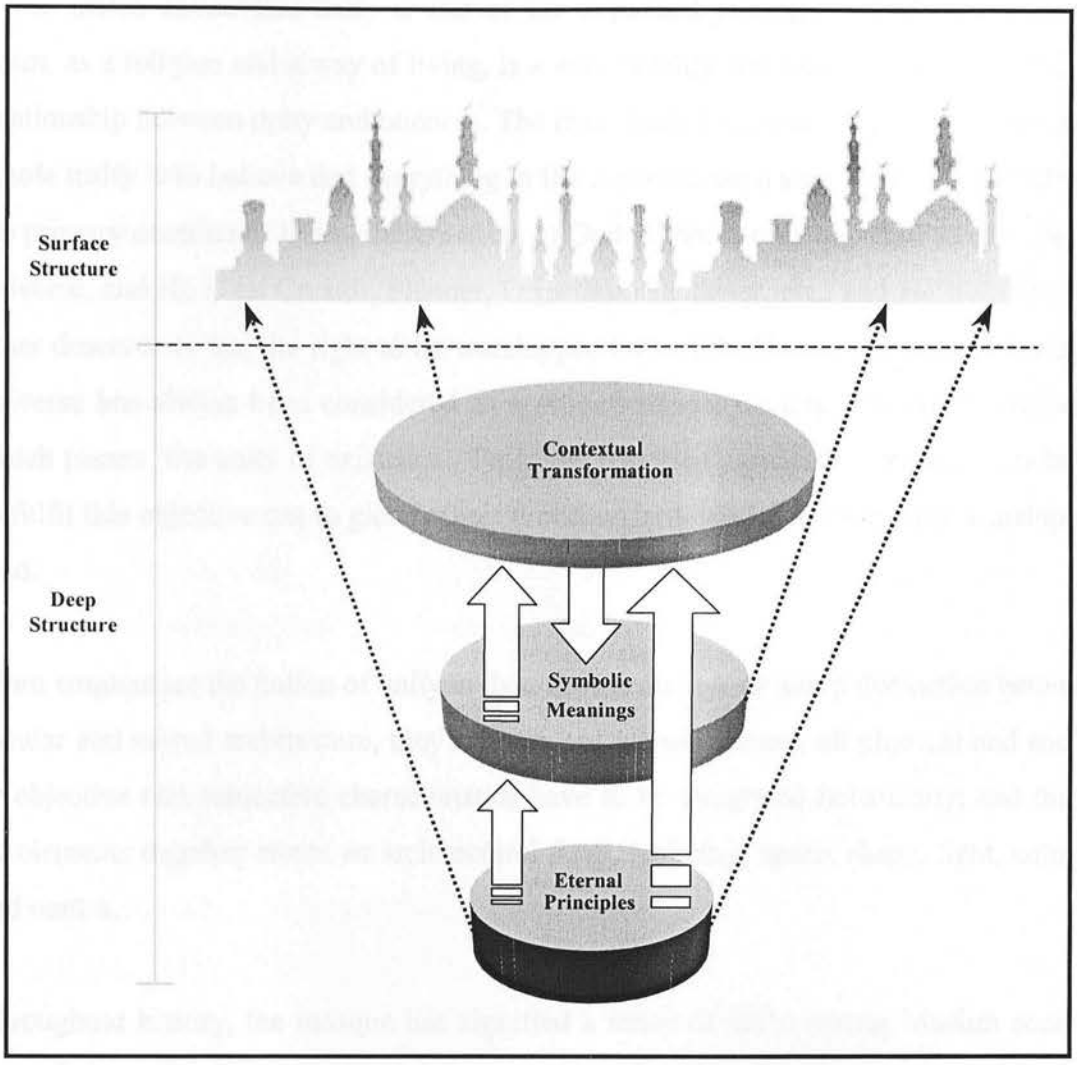

Figure (7-1) Hierarchy of three levels of forces (deep structure) underlying the mosque designs (surface structure). First the eternal unchangeable principles, second the symbolic meanings, and third the contextual transformations. Source (the researcher).

7.2.1 Eternal Principles

Referring to Islam and applying a structuralist approach, eternal principles are unchangeable laws which can be applied to all mosques. They are deeply rooted in the origins of the mosque and will persist in all mosques. In other words, mosque design should, by definition, accommodate and adhere to these principles. There are a vast number of principles forwarded by Islam. The present research discussed only a few of these principles, including oneness, unity, equality, knowledge, community, spirituality and tranquillity, purity and nature. These are components of the structure which itself carries the principles. The principles are all connected to one another, and integrated in a holistic manner as discussed below.

Oneness and Unity

It was stated earlier that unity is one of the important principles of Muslim society. Islam, as a religion and a way of living, is a way of unity and totality. There is a strong relationship between unity and oneness. The main basis for perceiving the universe as a **whole unity** is to believe that everything in the universe has a sole creator. This reflects the primary doctrine of Islam, the **Oneness** of God. There is only one God for the whole universe, and He is its Creator, Planner, Organiser, Sustainer, etc., and He is Allah. No other deserves or has the right to be worshipped but Allah. Hence, it is argued that the universe has always been considered as a unified whole, namely, *Wahdat El-Wujood*, which means 'the unity of existence'. From the religious perspective mosques are built to fulfil this objective not to glorify their founders, and detract from the true worship of God.

Islam emphasises the notion of unity in that: firstly, there is no sharp distinction between secular and sacred architecture, they are a united whole; second, all physical and social or objective and subjective characteristics have to be integrated holistically; and third, all elements together create an architectural form, including space, shape, light, colour, and matter.

Throughout history, the mosque has signified a sense of unity among Muslim society through its role, function, significance, and its location in the centre of the city, connecting the city residents to the whole of Muslim society. Consequently, mosque architecture should integrate all inherent characters and use all means to fulfil this unity.

Chapter four showed that there is another aspect that creates a sense of unity among Muslims all over the world. This is orientation. The Muslim has to face towards *Kaaba* in the city of Makkah (i.e. the *Quibla*) while praying uniting them with the whole of Muslim society across the world. This also provides a spiritual and social focus to the holiest place on earth. Thus, orientation towards Makkah is another unchangeable rule.

In the empirical work, respondents showed concern for having more than one mosque in the same area. It is perceived to be contrary to the concept of unity, because this may lead to the creations of different groups, i.e. if there are two mosques in the same street people will be divided into two. In traditional Muslim cities there was a mosque in each

residential quarter, creating unity within the quarter itself. This was in addition to the central mosque for the whole city which tied and united the residents of different quarters. However, having more that one mosque within the same quarter, or neighbourhood, could provoke division rather than unity. It should also be considered, however, that if the area of the neighbourhood is large compared to the size of a traditional quarter, the planners need to identify the appropriate number and location of mosques within it, while still adhering to the concept of unity.

This would result in social solidarity, based on religion. This social solidarity is realised in integrated communities with a distinctive sense of unity and social cohesion.

Equality

Unity was additionally shown in earlier sections to be fostered through equality. Islam emphasises the principle of equality and does not make any distinction between its believers, whether they are of different races, tribes, or nationalities, etc. Only morals, ideas and beliefs count. This should be reflected in the mosque's design not placing any constraints on their movement in the mosque. If all members of society feel they are equal to each other in their rights and duties, this will create a sense of unity between them and unify society into a single, strong body.

Further exploring equality as a main Islamic principle, chapter three showed that having a mosque in each neighbourhood is a reflection of equality. On a different level, one of the consequences of equality is unrestricted access to religious buildings. A mosque is a major space in which everybody prays, no matter if they are a ruler or an ordinary person. Therefore, a major quality of mosque architecture is that it is built for people and around people, rather than having people around architecture, i.e. one would not expect to see the prayer hall divided into first and economy class for example, nor should be there VIP and public entrances. All people should be allowed access and be able to practice the same rituals without any discrimination.

Furthermore, and from a broader perspective, in traditional Muslim cities there were no indications, in terms of materials, decorations, statues, columns, etc on the houses' facades to reveal the economic status of the resident. This appearance produces an order of integrating sameness and equality. It also promotes feelings of security as the rich and

poor live beside each other, permitting sustainable relationships uniting people through their relationship with the environment. Accordingly, the mosque emphasised this notion being harmonised with the rest of the built environment, maintaining the same **simplistic** and uncomplicated manner as the whole city. However, this does not mean that the house should be devoid of decoration, but rather the use of decoration should be simplistic without exaggeration. In summary, Islam's first and most important priority is the significance of the core not the outer appearance.

Community

The present research revealed how Islam considers sound community interrelations to be a good way of promoting the correct relation of human beings with God. The general umbrella for relationships in Islamic society is brotherhood between members of the community, under a unitary organic whole. In the broader sense, Islam considered urban communities to collectively form the ***Ummah*** i.e. nation, that has the potential to incorporate the whole of humanity.

Such societal bonds were reflected in the built urban form in Muslim cities, demonstrating the strong ties existing between Muslims, as well as the concept of centralisation, with the mosque at the heart of the city. Neighbourhoods were nothing but an expression of the strong ties between traditional societies as dictated by Islamic laws governing all people, rich and poor, young and old, Muslim and non-Muslim. The deeper people understand Islamic teachings, the more these teachings become reflected in the urban form. Likewise, less understanding is associated with greater deviation in the urban form, expressing duality between the built environment and religion, or in a broader sense, the community's way of living.

The survey confirmed that the embodiment of the sense of community outlined by Islam is also reflected in the numerous roles played by the mosque in society. As a social institution, the mosque strengthens social interactions, and bonds relations among members of society. People meet in the mosque for prayer as well as for special occasions i.e. weddings, funerals etc. This created strong relationships as well as a sense of unity and belonging, both to each other and to the mosque. The implication of this is the unifying of society and the promotion of strong social cohesion in the whole community. The unity of the whole Muslim nation and the creation of a single, strong

body, is the desired final outcome.

Chapter five indicated that the mosque has expressed an adaptive nature in responding to society's needs throughout its process of transformation. The mosque serves society and at the same time expresses it. The mosque reflects and fulfils its different needs because it is part of society and is totally integrated within it. Examples include the rise of *Madrasas,* medical facilities, and more recently multi-purpose halls. The main focus here, is the need to maintain the adaptive nature of the mosque so that it continues to embody the needs of society.

Nature

Nature is a source of faith and spirituality for Muslims. Chapter three explained that one may know more about themselves and their Creator through nature. Nature is a representation of the Divine Word, an expression of the eternity of God's handiwork, and an embodiment of the Unity of the Divine Principle.

The Islamic analogy between paradise and the beauty of nature, embodied in gardens and rivers, promotes the protection and preservation of nature. Mosques may incorporate gardens and water elements (e.g. fountains, streams, pools), to provoke and evoke the analogy of paradise and its spiritual connection with nature. In other words emphasising elements of natural scenery will remind Muslims of the award awaiting them, Paradise.

Nature has, moreover, often been a source of inspiration for designers. Islamic architecture has used natural analogies and vocabulary in botanical and floral ornamentation, especially in the mosques discussed in chapter four. This varied in accordance with the particular nature of every geographic region and cultural setting, and produced highly sophisticated mosques unique to every region throughout the Islamic World. This issue is discussed further later in section 7.2.2 symbolic meanings.

Knowledge

Islam is a religion based upon knowledge. It is ultimately knowledge of the Oneness of God combined with faith and total commitment to Him. References in the Quran and Hadith, shown in earlier sections of the thesis, indicate that a possessor of knowledge or

wisdom is given a very powerful gift, and that everyone should actively pursue knowledge.

Sacredness and supremacy can be seen in the favouring the Imam's place in the mosque. During preaching he ascends the *Minbar*, and during prayer occupies the *Mihrab*. This is a reflection of to the special appreciation Islam pays to knowledge and scholars. However, the Imam's special position is only preserved during prayers and preaching, as otherwise the Imam uses the same entrances and the same spaces as everyone else in the mosque.

This is reflected on the role of the mosque in educating and enlightening society. Education may include illiteracy classes, school lessons, in addition to regular lessons concerned with the Quran, Sunnah and other religious branches. Libraries may also be attached to mosques, to disseminate knowledge through arranging lectures, conferences, and symposia in addition to holding various book collections. This awareness of the importance of learning is not only religious, but is also a reflection to the community's own knowledge, values and culture. The aspect of knowledge and education was mentioned a number of times by the respondents.

Purity

Islam has clarified a characteristic approach to purity, which includes physical and spiritual purity. Spiritual purity is represented in the faith of the one God and the intention of removing one-self from every sin and evil action as well as practising good deeds. This purity is required in prayer, performed in concentration, devotion and tranquillity, celebrating spiritual contact with God.

Physical purity, which has a direct influence on spiritual purity, may be addressed at two levels. First at the individual level, and second at the building and environmental levels. Chapter three described that individual physical purity comes from personal cleanliness and hygiene. A Muslim has to wash before prayer, and should be well dressed. The purity of the building, on the other hand, was raised by the respondents in the survey on many levels. For example, it can be expressed in the cleanliness of the environment, especially around the mosque, including the prayer area, and through the separation of wet areas from dry spaces.

Purity of form and the structural systems employed is another relevant issue. Problems could occur if the mosque walls were not built in accordance with the *Quibla* direction, or if it had many columns, or even if the form was over complex and sophisticated. This will create a mismatch between the way the building is erected and the way people should use it. For example– having to pray in inclined lines will affect their level of tranquillity and concentration. Columns may distract the continuity of rows, and consequently affect the spiritual support experienced through Muslim brotherhood and cohesion.

Another issue relates to increasing of the scale of the mosque in terms of the spaciousness and the internal height, both should be carried out to reflect the glory and greatness of Islam. This will also be reflected on the user who will feel awe and respect towards the building as well as feeling small and weak compared to such a powerful and meaningful building full of spirituality. However, maintaining a balance between increasing internal space and maintaining external homogeneity with the surrounding built environment should be considered. It is also preferable not to build anything above the mosque, to maintain its privacy, holiness and spiritual meaning. The mosque symbolises the direct connection between the worshipper and the sky, and reminds people of the soul's transition from Earth to Heaven and the eternal relationship between them.

The illumination of the mosque needs to provide sufficient light for people to perform their worshipping in comfort while experiencing an exceptional spiritual atmosphere. This spiritual value is made explicit by placing a lamp on *Mihrabs* and enclosing it by a quotation from Al-Noor Sura of the Holy Quran

> *"Allah is the light of the heavens and the earth. The parable of his light is as (if there were) a niche and within it a lamp, the lamp is in a glass, the glass as it were a brilliant star..."*
>
> (The Holy Quran 24:35)

This treatment should highlight and act as a projection of the Word of God, suggesting that the Word of God is a source of illumination to the lives of people.

Excessive ornamentation and eccentric colours may divert people's concentration during prayers and distract them from devotion. Solid thick external walls also play an important role by increasing soundproofing, and allowing the worshippers to perform their prayers in complete devotion, tranquillity and peace of mind.

7.2.2 Symbolic Meanings

It was shown in chapter four that different elements of the mosque symbolise various meanings. This section deals with the symbolic meanings, or deep structure, underlying the physical representation, or the surface structure, of the mosque elements. These are features that are not necessarily as crucial as features that embody the eternal principles. Though, they have become part of the image of the mosque in people's minds as they see their social and cultural symbols expressed in the mosque, and there is no reason to believe that these contradict Islamic principles. Thus, it is expected that the designer pays attention to these embedded meanings, to make sure that whatever they produce responds to them rather than being irrelevant or alien. Any form produced on the basis of a sound understanding of these meanings should be adequate, as long as it complies with the contextual settings discussed in the next section.

It is quite difficult to separate the form (or the object) from the symbolic aspects, both of which reflect the cultural attitudes and satisfy the human need for aesthetics. Because they are the key to unity and continuity of spirit, which is built from meanings, and interconnects buildings, people and culture over time. Hence, the mosque has a holistic nature, comprising subjective aspects beyond the objective features. This reflects the holistic approach, which implies the study of a range of cultural values, which collectively constitute the whole. Holism requires a perception of the world in which everything is related to everything else. So, there is a unity in the universe in spite of apparent diversity.

It was explained in chapter two that wholeness is a law of systematic composition which governs the transformation of the systems that it structures. The whole is not the sum of the parts but includes their transformational relations and their special order. So the arrangement of the parts in a structure also has a crucial role. Such a crucial role could also be found in the unity between subject and object in the environment, which can be achieved through meanings and contextual symbolisation.

Symbolism in the mosque is the actualisation of society's view towards its organisation. This is a certain process, which creates an opportunity to read the Islamic culture and to enrich it. The development of a system of symbolism is, therefore, directly influenced by the Islamic culture and also directly shapes it.

Moreover, this study shows that our ties to the mosque are linked to our emotional life. Physical things embody memories, past relationships and achievements, reflecting parts of our history and respond to our psychological needs. Indeed, symbolic ties and meanings attached to the mosque are numerous and varied.

It is to be noted that symbolism in the mosque is not a static phenomenon, otherwise the form of the mosque would be merely copied in different places or different times. This contradicts the postulate of the thesis that the mosque is a system of transformation. These symbols are the product of a process of transformation resulting from the transformation of the human mind, which develops perceptions over time and increases in complexity. The implication of this is that the process of transformation is continuous and we should expect further modifications to take place, thus enriching the mosque. The following discussion outlines some examples of these symbolic connotations.

Chapter four investigated the hidden symbolic meanings of the minaret, which is known to symbolise the link to heaven, oneness, guidance, and the first letter of God's name in Arabic. The implication of this is that a minaret may be placed in a prominent location, to pass on the message of guidance. A minaret should be inclined at an angle, and must clearly indicate the upward connection to heaven. It is not to be curved either, so as not to contradict with the symbol of God's name. The Double bulbs introduced in the minaret contradicted the embedded meaning of oneness and, thus were not used after the Mamluk era.

Although the minaret is a symbol of verticality and the link to heaven, people have different perceptions of this verticality. This is reflected in the many forms of the minaret. This same principle can be applied to the majority of other elements.

Spiritually, the dome symbolises the sky, being a model for the open wide horizon and

spherical sky that have no pillars. Cosmologically, the dome is the transition from Earth (the square underneath the base of the dome) to Footstool and Throne (the octagonal zone), to the celestial dome, and finally to God the One. Obviously, the whole process emphasises upward vertical movement. Thus, a space truss or modern flat roofing, although responding to the functional dimension and the need to minimise the number of columns, will not respond to the symbolic role attributed to domes.

The deep symbolic structure of the *Mihrab* has different levels. Firstly it venerates the place that Prophet Mohamed (pbuh) used to pray in Al-Masjid Al-Haram in Makkah and in Al-Masjid Al-Nabawi in Al-Madina. Secondly the *Mihrab*, in all mosques, is directed towards *Kaaba*, implying unity between all Muslims across the world at the time of prayer. Finally, the *Mihrab* identifies a spiritual direction, an aspiration towards divinity, signifying a door opening onto the divine world. It sends the vision to the other world, that of the infinite, raising an image of passage towards God. The *Mihrab's* role of identifying the prayer direction could be fulfilled functionally by a drawn line on the floor or a sticker arrow on the wall. However, this would not include the sentimental meanings associated with the *Mihrab* as described above.

With regard to decoration and ornamentation, Islam forbids the use of statues and paintings, especially human and animal paintings, to negate idol worshipping. Permissible alternatives were interlacing floral patterns, geometric patterns, calligraphic inscriptions or even a combination of these. Interlacing floral patterns symbolise upward movement, being the direction of growth, towards the sky. The sky is the refuge for all people during their prayer while demanding mercy from God. Additionally, plants symbolise life implying that this is lively place, including activities relevant to life. Finally, the growth of plants is a dynamic process, which complies with the nature of the Muslim society in its continual, dynamic state of transformation. The geometrical pattern on the other hand, symbolises Muslim society and the interlacing of the pattern represents coherence and unity of Muslim society.

With regard to the calligraphic inscriptions, it was seen that their beauty was beyond their visual impact. They combine the verbal and the visual, making the mosque very readable, and emphasising its link to the Quran and the sacredness of the written word in Islamic culture. Moreover, as the words of the Quran conveyed the divine message, so

the inscribed verses of the Quran are considered to be the visual analogue for divine messages, not just a matter of decoration.

The use of any of the above noted patterns should be within reasonable boundaries without exaggeration, maintaining the desired level of simplicity.

All these examples highlight the holistic relationship between the objective phenomena and the subjective aspects of the mosque.

7.2.3 Contextual Transformations

Chapter five followed the transformation of the Cairene mosque throughout its history. It should be noted that this transformation occurred in a holistic manner comprising physical (surface) and subjective (deep) transformations. The physical is related to the form, material, decoration, and construction methods. This transformation resulted from people's attitudes and the transformation of their perceptions. People inherited a tendency to increase the beauty of the mosque through these physical aspects, and it is important that this be allowed to happen in responding to the assumption that the mosque is a system of transformation. The subjective transformation, on the other hand, relates to the transformation of the society in terms of its social (norms, traditions, rules etc.), cultural, educational, intellectual, political and economical aspects. The mosque as a system of transformation supports both transformations as explained in the previous section. However, in this section the study reveals the socio-cultural aspects within the context of Cairo.

To adapt to the environment is to allow different resources, features and forces inherent in any geographical area to be accommodated. Generally, contextual transformations are related to geography, economy and natural resources; and their socio-cultural implications. Hence, they are particular to every culture and time. They relate to the cultural and societal transformations, reflected in the building techniques, materials and morphologies. Climatic considerations, environmental constraints and natural settings play an important role in this regard too. In terms of mosque design, this means that a mosque designed in Egypt would not be the same as that designed in Turkey for example. The Turks developed complex dome structures to create spacious prayer halls representing heaven through the dome. The dome also responded to the local climate,

which, in contrast to the hot climate of Arabia, was not suitable for the use of open courtyards. With regard to building materials, these vary according to locally available resources, as the use of local materials harmonises the mosque with its surroundings and with nature.

If any element used by a certain culture has its origins in another earlier one, this does not mean that it has the same meaning and significance as in the original one. The meaning and significance depends on the values identified by the new culture. This notion was shown to be true in chapter four.

Below are a number of examples of the transformation of the Cairene mosque, with reference to the Prophet's mosque, as applied in chapter five.

The Prophet's mosque and house in Al-Madina, became a model for later Islamic cities. The house of the Caliph or the city's governor were attached to the mosque, which facilitated flexible communication between the governing authority and the public. Hence, the mosque occupied the centre of the city on both its objective and subjective levels. This central location affected the spatial configuration of the city. The integration of the mosque with the rest of the city has an impact on the location of various activities as well as the overall form of the city. In terms of deep understanding, this central location was interpreted as a centre of accessibility, where Muslims would meet. It is a link between elements of society, to form the link between roles and achieving the essence – the unity (the essential principle of Islam). Thus, it is argued that traditional Muslim cities were built around a system of social, political, religious, and communal organisation. Therefore, it is considered that this central location should be maintained during the planning of new cities.

In a different context, one of the major political transformations which took place during the Abbasid era, was the relocation of part of the mosque's social and political role to the governors' palaces. This symbolised a separation between religion and politics, a tradition that was continued during later periods. This has also affected the role of the mosque in society. It was no longer the centre of political power and its position at the centre of the city was ended.

The elevated mosque is another local response to a new emergent need which occurred during the Fatimid period. Another example is the Ayyubid mosque which responded to the socio-cultural and religious needs of the time by producing the *Madrassa* design typology.

In some eras, and currently in some countries, rulers' tombs are annexed to mosques. Sometimes drinking *Sabils* were added. Furthermore, in some Muslim countries, according to their cultural traditions, special halls are annexed to mosques for weddings and birth celebrations as well as funerals and condolences.

Water fountains were discussed as relevant elements to Damascus and Cairo. However, these never placed in the Prophet's mosque for example, due to the availability of permanent water sources and the agrarian nature of these communities.

In mosque designs there are naturally local variations, representing different contexts, in terms of place and time. Their designs respond to the environment, trying to fulfil both the physical aspects (climate, topography, material, etc.) and the non-physical (social, cultural, political, etc.). In spite of the slight differences in their appearance, which resulted in this phenotypic diversity, a system has been formed that identifies the mosque. There is a set of rules that govern this formation process, and a pattern, or genetic structure, is followed to reproduce the mosque.

7.3 Structuralist Interpretation

The relationship between the components of a structure is organised by particular laws. These laws also govern the transformation of systems, and apply to the mosque as a system of transformation, and govern the sustenance of the mosque, its definition, its role and its meaning. This reflects the genotype / phenotype analogy, which was studied in chapter two. This is supported by the fact that there is a sense of unity between the natural sciences and cultural sciences, supporting the hypothesis that the universe is one united whole. Thus, there is a link between the biological aspects from one side and the cultural, philosophical, social and architectural aspects from the other side. This emphasises the notion of holism and raises unity between genetics and the mind. Genes carry information and the mind uses information. This implies that the mosque has a genetic language, and there is a genetic code to be followed. These rules create a

framework, a seed, which if planted will grow into a mosque.

From the structuralist point of view, the current research contributes to the understanding of the genotype of the mosque. The genotype provides a set of rules controlling the reproduction of the mosque. The rules that form the genotype of the mosque relate to three levels of forces underlying its designs. These are the eternal principles, symbolic meanings and contextual transformations. These forces contribute to the genotype of the mosque to different degrees. Phenotype, on the other hand, is the physical interpretation.

It is very important to highlight the significance of the contextual transformation, this gene is the reason that mosques have different typologies in different environments, which explains the significance of the environment and its contribution to the phenotype. Hence, phenotypic differences that appear in some environments may not appear in others due to the adaptive nature of the mosque in response to its environment. This implies that there is no single genotype that is best for all environments.

In conclusion, taking into account that individual phenotypes are linked by a continuously transmitted information structure that controls their form, genotype explains a total informational environment within which the phenotype exists. In other words, it could be said that a genetic system involves the transmission of information from one generation to the next. While Phenotype is the actual realisation of the rule in different physical environments. It is what is seen, and what is produced when the genetic template is used.

The notion of genotype / phenotype correlates to the concept of deep structure / surface structure, as discussed earlier in chapter two. Deep structure is a conceptual structure, identified as an abstract underlying order of elements that allows the functioning of transformational rules. Surface structure is the perceptual structure, and the sensible aspect of architecture. In other words, Surface structure represents the building of the mosque itself, its ornamentation and decoration, its location and all the visible aspects. Deep structure is the meaning and the forces responsible for producing a particular design in a particular place.

It is realised that there is a hierarchy in the structure of the three levels or types of genes, each having different levels of significance. The first is super-ordinate, the eternal principles, and the second subordinate, which are symbolic meanings and contextual transformations. Muslims adapt their environment to achieve unity, equality, and purity.

Hierarchy is related to the different roles the mosque plays in the life of Muslim society. These roles have enhanced their complexity and reached a place of high order in the hierarchy of Muslim society. This is why they have an influential impact on every aspect of the Muslim society, including urban structure, spatial organisation, thoughts, and intellectuality. Hence, the place of the mosque in Muslim society is super-ordinate.

In brief, it is important that architects pay attention to the context they are designing for. In addition they should consider the three levels of underlying forces discussed above. Accordingly, one should be able to make a distinction between Islamic architecture and the architecture of the Muslim world, arguing that Islamic architecture is a type of architecture that considers such layers of forces and hidden meanings in the design. On the other hand, architecture of the Muslim world, merely indicates the location in which this architecture was implemented, disregarding levels of motivation and socio-cultural aspects.

The implication of self-regulation is that the role of the mosque will be driven by the social, political and economic necessities of each particular time. For example, the choice of unity, equality, purity, community etc. could vary between one time and the other over history or from one place to another. The transformational study of the Cairene mosque, presented in this research, confirms this understanding. This is seen in the adaptive nature of the mosque which allowed it to fulfil the changing needs of Muslim society over a period of many years. Thus, it is suggested that the mosque is a self-regulated system that maintains its role in society through transformation.

Furthermore, the self-regulating nature of the mosque is dependent upon the pressures placed on society itself. The society has and will be exposed to different types of pressure i.e. political, economical, starvation, and national crises. In such cases people seek refuge in the mosque, expressing and supporting the community. This is, in a sense, self-regulation, because it provokes the sense of institution. People gain the sense

of belonging and feel there is something that ties them to each other, to the mosque and the whole society. These issues form part of the genetic code of the mosque. Examples of how the mosque was politically self-regulating under different pressures were highlighted earlier in this chapter.

7.4 Recommendations

The researcher intended that this research would be of general interest to architects, urban designers, planners and students concerned with the theoretical foundations of their discipline. However, the study revealed that the mosque is interrelated within a system, containing many other components. This implies that designers should not see people, their culture, environment, and thoughts as individual concepts, building their decisions upon such thoughts. Rather they should look to the totality and seek appropriateness and uniformity in expression of knowledge in a certain culture. Successful designs develop the environment in a holistic manner allowing the society to evolve through the appropriate use of its related symbolic meanings. In other words, designers should always consider that sustaining the role of the mosque necessitates sustaining the socio-cultural process which is responsible for maintaining balance between the physical form of the mosque and its subjective dimension.

People have a strong affinity for their cultural heritage, and their needs and desires should be considered in planning for the future. This could also be achieved by considering the transformation of the mosque and its adaptation to society needs. Hence, the genetic code of the mosque should be considered while planning new cities. At the surface level this will help to restore its location in terms of its centrality, spaciousness and architectural design. In addition, at the deep level, it is important to consider the central role of the mosque as the heart of society.

Consequently, and from a broader perspective the study suggests that there are two factors that are necessary for the creation of a successful built environment. Firstly, interrelating details with unity, the parts with the whole. Hence, the main worldview should be the concern of all those professionals working in the field of the built environment. These people should be trained in this approach to become closer to the core values of society in transition. Secondly, decision-makers should consider interdisciplinary research into human relationships with their physical environment,

with closer collaboration between the fields of psychology, sociology and that of professions in the built environment.

The current research clarifies the significant role education can play in the spread of these concepts among the general population as well as designers and decision-makers. An initial step may be made to create architectural language which acknowledges the structuralist approach. The implication of this is that schools of architecture should integrate courses on the fundamental principles of holism and structuralism into their curricula.

7.5 Further Research

The study cannot suggest to have produced a fully-fledged theory, and cannot claim to have no problems and limitations of its own. Considerably more development work could be done, and a great deal more information is likely to emerge from its general application. Issues related to this subject are wide and varied and the present study takes only the first step. Therefore, some issues may need further investigation. Suggestions for further research directions are discussed below.

This research has opened a door for exploration and investigation into the use of a holistic approach to enrich the existing literature on the mosque and its role. It is suggested that the results of this research can take its place alongside other studies as an evaluative tool to be employed in explaining the characteristics of any other institutional phenomenon by tracing its origins, symbolic deep meaning and transformation. A lot of research remains to be done to expand on each of the introduced structuralsit concepts, and on the other Islamic principles (e.g. co-operation, solidarity, obedience, and honesty), linking each to the mosque in more detail.

With regard to the mosque, the present research suggests that a thorough study of the architectural and urban design interpretation of structuralism in the mosque should be conducted to produce a set of design criteria. These design criteria should characterise the mosque as an institution to allow the mosque to fulfil this role successfully. It is also possible to apply the concept of transformation to any architectural element i.e. the minaret or the dome. Another possible application would be to the choice of materials used or the method of construction.

Furthermore, research into what is meant by contextual transformation could lead to many other important findings. Future studies may employ the same methodology to study mosques elsewhere and compare the results with those from Cairo. Each country will have its own reflections of all the forces and factors of the transformation of the mosque, in terms of cultural and geographical contexts. Research in other Islamic countries may reveal further links between environmental studies and mosque design.

The present research could have benefited from further analysis of the notion of genotype / phenotype of the mosque, but limitations of time and volume did not allow this. Therefore, it is suggested that future studies could develop this concept further through an inclusive study of the genotype of the mosque in which the mosque as a phenomenon should be seen as the expression of its genetic characteristics.

7.6 Final Words

The holistic approach adopted for this thesis represents a way of dealing with the environment and forms the basis for unification between people and their surroundings through local knowledge and meanings. It is an expression of the identity of society. This implies that designers should be aware of the significance of having a good understanding of the cultural values of the relevant society. However, this understanding is considered to be in opposition to the use of scientific ideas in environmental studies, based on the standardisation and globalisation of related issues. As it is realised that many modern and contemporary design approaches are based on global typologies that have no bearing for people or their cultural and symbolic values in relation to their local environment. This tendency towards the adoption of global solutions does not only impose homogeneity, but also suppress the real meanings and forces inherent in diverse societies.

The mosque has the potential and power to play a vigorous role in leading Muslim society in its struggle against the imposition of global forces. This can be achieved by creating awareness of globalisation and its negative effects on the identity of local cultures. The mosque is a medium for the dissemination of knowledge to society. It is an institution which lends order and harmony and, as a structural transformation, mirrors the laws and the composition of Muslim society.

Unity in its deepest sense, implies a mental unity, a shared image of belonging to a much larger whole, even while retaining affection and respect for one's own home region and those of others. Thus, it is suggested that the educational and communication systems of the Islamic World can do so much to create a better future.

The current research showed that the mosque's image reflects many roles that it has fulfilled throughout its history. These roles range from purely religious, strengthening the relationship between Muslims and God, to bonding spirituality to education in order to emphasise a sense of community. This is accomplished by enabling the society to transform and adopt change and in this way cope with the emerging circumstances that are a part of the process of a society's evolution. The mosque has also played a significant role, both directly and indirectly, in formulating an ideology and political response to many events throughout history. Therefore, the mosque should maintain its links to the community, sharing responsibilities and exchanging views and knowledge through the community. This will also have a very profound influence on how people perceive quality of life.

This image need not only be preserved but must also be transformed to allow continuous harmony between society and the role of the mosque. This should be a holistic relationship. This implies that the mosque should address every aspect of life, because again, it is not something that can be seen from any singular perspective.

Similarly, there are another two levels within which the mosque should have a role. This includes its role for the Muslim nation and its role to humanity. At the Islamic level, the mosque should extend its links to the individual, providing a sense of security and belonging. In this regard Islam emphasises the value of individual freedom and tranquillity. The mosque should also be allowed to extend its role to address national issues through formal institutions. At the International level the mosque should play a role in responding to political events around the world. Islam is not dedicated or directed to a certain people or a certain area, it is a religion for all people across the world. Islam offers support and aims to achieve the best possible living conditions for all humanity. The mosque is an institution for Muslims, who are part of humanity. This institution should continue to contribute to society without prejudice, segregation or discrimination

between Muslims and non-Muslims. The implication of this is that all responsible people and those who are in charge of nurturing this attitude should open up these channels to allow humanity to benefit from the mosque as institution. Finally, none of these three levels, community, the Muslim nation, and the whole humanity should be suppressed for any reason.

Through conducting the present research the author has himself derived a deeper understanding of the environment in general and the mosque in particular. The author hopes that this research will contribute to a better understanding of the special nature of the mosque and how it should be dealt with. The author also hopes to use this experience to contribute to the future well being of his own society.

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APPENDIX ONE

GLOSSARY OF TERMS

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GLOSSARY OF TERMS

Allah	God.
Allah Akbar	God is Great.
Adhan	Prayer call.
Alama	Land mark.
Allele (Abbrev. Allelomorph)	A gene which has alternatives at the same locus.
Al-Khutba	Speech.
Al-Khatib	The person who delivers the speech.
Amir Al-Muminin	The prince, guardian and defender of faith.
Andalusi	Related to Spain during the Arab Conquest, as Spain was called *Andalus* at that time.
Asas	Policemen.
Bab	Gate or door.
Balata	The enclosed area between two rows of arcades.
Barameq	Balusters.
Bimarestan	Hospital, also Marestan.
Bwa'ec	A row of columns supporting the bearing arches of the roof (Arcades).
Beyt El-Islam	The house of Islam.
Broozat	Prominence.
Caliph	Ruler.

Culture	The system of shared attitudes and symbols that characterises a group of people. A shared schema that designates regularities in a group's thinking and behaviour.
Dar Al-Imara	The residence of the commander in chief or the governor.
Deftardar	Chief Accountant.
Dikka	A raised platform, on which a *Muezzin* would perform the prayer movements after the *Imam* in complete view of all worshippers.
Divan	Ruling Council.
DNA (Deoxyribose Nucleic Acid)	Part of the substance of chromosomes in which genetic information is coded.
Durqa'a	Central section of Qa'a, usually sunken and set with high roof.
Eid	Feast.
Fanoos	Lantern.
Finaa	Courtyard.
Fosoos	Cloves.
Gene	A physical particle that determines some aspect of inheritance.
Genetic	Under the control of differences in genes between one individual and another.
Genotype	The total set of genes carried by an individual.
Hadith	The sayings of Prophet Mohamed.
Hakeems	Wise men of old Arabia.
Hammams	Bathes.
Hawagez	Barriers.
Higra century	The Higra dating system in general, is related to the immigration of Prophet Mohamed from Mecca to Medina, and is basically depending on the lunar system (see appendix three).
Imam	Prayer leader.

Isra'	These are two events connected to each other that are Isra' and Mi'raj. They stand for the Miraculous journey of Prophet Mohamed (Peace be Upon Him) from Makkah to Jerusalem, and Ascent to Heaven. And finally, where he performed the prayer as Imam.
Iwan	Deep vaulted hall
Jamie	Congregational Mosque.
Kaaba	is a cube shape structure, and is considered as the first house of worship built for mankind. It was originally built by Adam and later re-constructed by Abraham and Ismail
Kawabil	Cantilever Supports.
Khan	Hostel for merchants.
Khanqah	Hospice for devout religious grouping, such as the Sufis.
Khutba	Sermon.
Kursi	Chair.
Kuttab	Elementary school, often attached to a mosque.
Ma'adhana	Minaret.
Mabkhara	Generally, it means incense burner. It was, however, associated with the Minaret, because the Caliph Al-Hakim Bi- Amr Allah used to burn incense in his Minaret to perfume the Mosque. The tradition of burning incense was known and common since the early days of Islam, not only by the Caliph Al-Hakim Bi- Amr Allah. However, he was the first to have incense burned -before his arrival- in the pulpit from which he delivered Fridays speeches, that was decorated with a domed pavilion.
Madrasa	Foundation built specifically as a teaching establishment for theological sciences, and assigned to one or more schools of law.
Masjid	Mosque.
Manara	Lighthouse.
Maqsura	A place inside the Mosque very close to the *Mihrab,* specifically for the ruler to maintain his privacy and enable him to participate in prayers.
Mashkat	Lamp.
Mashrabeyya	Decorative screens composed of pieces of turned wood used in casement windows or dividing walls.

Mausoleum	The place where pious people and Prophets were buried.
Mazhab	Religious Sect.
Mida'a	The Ablution Place.
Mihrab	Niche indicating the direction of Makkah.
Minbar	A stepped chair from which the sermon is delivered.
Mi'raj	These are two events connected to each other that are Isra' and Mi'raj. They stand for the Miraculous journey of Prophet Mohamed (Peace be Upon Him) from Makkah to Jerusalem, and Ascent to Heaven. And finally, where he performed the prayer as Imam.
Muezzin	The man who calls for prayer.
Muftis	scholars who make Iffta, which are decisions concerning religious matters.
Muqarnas	An ornamental arrangement of multi-tiered niches also called stalactites.
Musalla	Small prayer area.
Mutation	A change in the genetic code.
Pendentive	A triangular area formed by cutting away corners so that a square building can accommodate a dome.
Phenotype	The set of characteristic of a living organism.
Qa'a	Main hall of a domestic building.
Qandil	Lamp.
Qasr	Palace.
Quibla	The direction towards the Holy Kaaba in Makkah
Qulla	A water container used by Egyptians.
Quran	The Holy Book of Islam.
Ramadan	A Holy month, during which Muslim people fast.

Ribats — A religious building that was firstly built at the borders close to the enemy, and accommodated the army. It was later developed to accommodate the Sufi *Sheikhs*, and became inside the town. Generally, it contained a prayer hall, a court, group of *Iwans*, water place and accommodation.

Riwaq — Colonnade running along the inside wall of an open court.

RNA (Ribose Nucleic Acid) — A substance which codes genetic information and in most organism is essential for the utilisation of the information carried by DNA.

Sabil — A public drinking fountain.

Sahn — Central courtyard of a mosque.

Salat — Prayer.

Sawma'a — Silo.

Shahada — Believing and declaring that there is no God but Allah, and Mohamed is the Prophet of Allah.

Sheikh — Religious leader.

Sunnah — The sayings and doings of Prophet Mohamed, which is considered the second source of Islamic legislation after the Holy Quran.

Suq — Market.

Sura — A set of verses of the Holy Qura'n.

Takbir — Glorifying God.

Takkeyya — Helmet.

Wahdat El-Wujood — The unity of existence.

Wakalat — Merchant depot.

Widu — Getting abluted.

Ziyada — Building extension.

Zygote — The result of the sexual reproduction, it is composed of a cell created as a result of the union of the sperm and the egg, in which the nuclei are combined. The earliest stage of the diploid generation. Afterwards, the embryo is constituted during the process of growth.

APPENDIX TWO

CHRONOLOGY OF MAJOR ISLAMIC BUILDINGS

APPENDIX TWO

CHRONOLOGY OF MAJOR ISLAMIC BUILDINGS

The Period of Early Islam

Basra Mosque (14 AH / 635 AD).

Kufa Mosque (17 AH / 638 AD).

Mosque of Amr Ibn Al-A'as, in Fustat (21 AH / 641 AD).

The Ummayyid, Abbasid and Tulunid Periods

Ahmed Ibn Tulun Mosque (263 - 265 AH / 876 - 879 AD).

Al-Aqsa Mosque- Jerusalem (163 AH / 780 AD).

Al-Hayr Eastern palace (110 AH / 728-729 AD).

Dome of the Rock in Jerusalem (72 AH / 692 AD).

Nilometer (248 AH / 861-862 AD).

Quairawan Mosque (50 AH / 671 AD).

Salibeyya dome in Samarraa (248 AH / 862 AD).

Samarraa in Iraq (232 AH / 847 AD).

Ummayyid Mosque in Damascus (133 AH / 750 AD).

The Fatimid Period

Abo Al-Ghadanfar Minaret (552 AH / 1157 AD).

Al-Aqmar Mosque(519 AH / 1125 AD).

Al-Azhar Mosque (361 AH / 972 AD).

Al-Geyuoshi Mosque (478 AH / 1085 AD).

Al-Hakim Mosque (403 AH / 1013 AD).

Al-Saleh Tal'i Mosque (555 AH / 1190 AD).

Bab Al-Futuh & Bab Al-Nasr (480 AH / 1087 AD).

Bab Zuwayla (485 AH / 1092 AD).

Badr Al-Gamaly Dome (487 AH / 1094 AD).

Great Mosque of Isna at Upper Egypt (474 AH / 1081 AD).

Sayeda Atika mausoleum (514-519 AH / 1120-1125 AD).

Sayeda Ruqayya mausoleum (527 AH / 1133 AD).

The seven girls mausoleum in Egypt (400 AH / 1010 AD).

The Ayyubid Period

Al-Saleh Nagm Al-Din Madrasa (640 - 641 AH / 1242 - 1243 AD).

Al-Saleh Nagm Al-Din Mausoleum (647-648 AH / 1249-1250 AD).

Al-Zafar tower (572 AH / 1176 AD).

Imam Shafi'i dome (608 AH / 1211 AD).

Shagarat Al-Durr Dome (468 AH / 1250 AD).

The Baharite Mamluk Period

Al-Naser Mohamed Mosque in the Citadel (735 AH / 1335 AD).

Al-Zahir Baybras Al-Bunduqdary bridge (665 AH / 1266-1267 AD).

Al-Zahir Baybras Mosque (667 AH / 1269 AD).

Al-Zahiriyyah Madrasa (662 AH / 1263 AD).

Aqbugha Mosque (741 AH / 1340 AD).

Aqsunqur Mosque (748 AH / 1347 AD).

Asanbugha Mosque (772 AH / 1380 AD).

Aslam Al-Silihdar dome (746 AH / 1345 AD).

Bashtak Palace (735-740 AH / 1334-1339 AD).

Bashtak Mosque(737 AH / 1336AD).

Baybars Al-Gashenkir Mosque (703 AH / 1303 AD).

Baybars Al-Gashenkir Khanqah (706 – 709 AH / 1306 – 1310 AD).

Qala'un complex. (684 AH / 1285 AD).

Safi Al-Din Gawhar Al-Maliky dome (714 AH / 1315 AD).

Sarghatmash Madrasa (757 AH / 1356 AD).

Shaikhu Al-Nasiri Mosque (750 AH / 1349 AD).

Shaikhu Al-Nasiri Sabil (755 AH / 1354 AD).

Singer Al-Gawli Madrasa (703 AH / 1303-1304 AD).

Sultan Hasan Madrasa (764 AH / 1362 AD).

Umm Al-Sultan Sha'ban Madrasa (770 AH / 1369 AD).

Ylgay Al-Yusufi Madrasa (774 AH / 1372 AD).

Yunis AI-Daudar dome (783-784 AH / 1382 AD).

Zain Al-Din Youssef Madrasa (697 AH / 1298 AD).

The Burgi Mamluk Period

Al-Ashraf Bresbay Madrasa (829 AH / 1425 AD).

Al-Fidawiyya Dome (884-886 AH / 1479-1481 AD).

Al-Ghuri Wikalah (909-910 AH / 1504-1505 AD).

Al-Ghuri Madrasa (909-910 AH / 1504-1505 AD).

Al-Mu'ayyad Mosque (823 AH / 1420 AD).

Al-Mu'ayyad Hospital (821-823 AH / 1418-1421 AD).

Amir Kabir Qurqumas Madrasa (911-913 AH / 1506-1507 AD).

Atymish Al-Bagasi Madrasa (785 AH / 1383 AD).

Barquq Madrasa (786-788 AH / 1386 AD).

Farag Ibn Barquq Khanqah (813 AH / 1411 AD).

Ganibak Al-Ashrafi dome (830 AH / 1427 AD).

Mahmoud Al-Kurdi Madrasa (797 AH / 1395 AD).

Qanybay Amir Akhur Madrasa (908 AH / 1503 AD).

Qanybay Al-Ramah Madrasa in the Citadel (908 AH / 1503 AD).

Qayetbay Madrasa (877 – 879 AH / 1472 – 1474 AD).

Qayetbay Wikalah at Al-Azhar (882 AH / 1477 AD).

Qayetbay Drinking Room (884 AH / 1479 AD).

Qayetbay House (890 AH / 1485 AD).

Qunsuwa Abu- Sa'id Mausoleum (904 AH / 1499 AD).

Sultan Inal Khanqah (855-860 AH / 1451-1456 AD).

Zain Al-Din Yahya Mosque at Baulaq (852 AH / 1448 AD).

The Ottoman Period

Al-Burdaini Mosque (1025-1038 AH / 1616-1629 AD).

Al-Kiridliyya House (1041 AH / 1631 AD).

Al-Suhaimy House (1058-1211 AH / 1648-1796 AD).

Al-Sulaimaniyya Madrasa (950 AH / 1543 AD).

Gamal Al-Din Al-Dhahabi House (1047 AH / 1637 AD).

Musafirkhana (1193-1203 AH / 1779-1789 AD).

Mohamed Bey Abu Al-Dahab Mosque (1188 AH / 1774 AD).

Queen Safiyya Mosque (1019 AH / 1610 AD).

Sinan Pasha Mosque (979 AH / 1571 AD).

Sulaiman Pasha Mosque (935 AH / 1528 AD).

Sultan Mahmud Madrasa (1164 AH / 1750 AD).

Mohamed Ali Period

Mohamed Ali drink room (1244 AH / 1828 AD).

Mohamed Ali Mosque in the Citadel (1246 – 1265 AH / 1830 – 1848 AD).

Sulaiman Agha Al-Silahdar Mosque and Sabil (1255 AH / 1839 AD).

APPENDIX THREE

THE ISLAMIC CALENDAR

APPENDIX THREE

THE ISLAMIC CALENDAR

(Derived from: El-Kassar, N. A., 2001 "The Concept of Ownership in the Formation of the Islamic City", pp.353-359)

The Islamic calendar, like many other calendars, is based on a lunar year of approximately (354) days, about 11 days less than a solar year. In order to keep the lunar months in alignment with the major seasons, most users of a lunar calendar include an extra or thirteenth month. The Muslim calendar has no extra month as a Quranic revelation (Surat Al-Tauba, verse 36) determined the calendar year at twelve lunar months. The result is that knowing the Muslim month and year in which an event took place does not indicate the corresponding season or specific month in the Gregorian solar calendar. The only easy way to calculate the Gregorian equivalent for a Muslim date is to use a table such as the one that follows.

The Caliph Omar established the first year of the Muslim calendar as the year in which the Prophet Mohamed (pbuh) left Makkah to Al-Madina, This migration or *Higrah* became the name for the Muslim calendar (AH = Anno Hegirae) and 1/1/1 *Higri* was calculated as (14 July 622AD).

The following tables show the start Gregorian starting date of every *Hijri* year until the year 2000. To calculate the approximate Gregorian date for a particular *Higri* day, start at the Gregorian start date of that year, then add the appropriate number of days/month based upon:

1-Muharram	5-Jumada Al-Ula	9-Ramadan
2-Safar	6-Jumada Al-Akhira	1O-Shawwal
3-Rabi Al-Aawal	7-Rajab	11-DhuI Ouida
4-Rabi Al-Thani	8-Shaban	12-Dhul Hijja

In order to calculate the exact Gregorian day for a *Higri* day, more elaborate tables than the one in this appendices must be used. Work by G.S.P. Freeman-Grenville (London: Oxford University Press, 1963), gives clear instructions and can be used for such purposes.

HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR
1	16 July	622	81	26 Feb.	700	161	9 Oct.	777	241	22 May	855
2	5 July	623	82	15 Feb.	701	162	28 Sept.	778	242	10 May	856
3	24 June	624	83	4 Feb.	702	163	17 Sept.	779	243	30 Apr.	857
4	13 June	625	84	24 Jan.	703	164	6 Sept.	780	244	19 Apr.	858
5	2 June	626	85	14 Jan.	704	165	26 Aug.	781	245	8 Apr.	859
6	23 May	627	86	2 Jan.	705	166	15 Aug.	782	246	28 Mar.	860
7	11 May	628	87	23 Dec.	705	167	5 Aug.	783	247	17 Mar.	861
8	1 May	629	88	12 Dec.	706	168	24 July	784	248	7 Mar.	862
9	20 Apr.	630	89	1 Dec.	707	169	14 July	785	249	24 Feb.	863
10	9 Apr.	631	90	20 Nov.	708	170	3 Julu	786	250	13 Feb.	864
11	29 Mar.	632	91	9 Nov.	709	171	22 June	787	251	2 Feb.	865
12	18 Mar.	633	92	29 Oct.	710	172	11 June	788	252	22 Jan.	866
13	7 Mar.	634	93	19 Oct.	711	173	31 May	789	253	11 Jan.	867
14	25 Feb.	635	94	7 Oct.	712	174	20 May	790	254	1 Jan.	868
15	14 Feb.	636	95	26 Sept.	713	175	10 May	791	255	20 Dec.	868
16	2 Feb.	637	96	16 Sept.	714	176	28 Apr.	792	256	9 DEc.	869
17	23 Jan.	638	97	5 Sept.	715	177	18 Apr.	793	257	29 Nov.	870
18	12 Jan.	639	98	25 Aug.	716	178	7 Apr.	794	258	18 Nov.	871
19	2 Jan.	640	99	14 Aug.	717	179	27 Apr.	795	259	7 Nov.	872
20	21 Dec.	640	100	3 Aug.	718	180	16 Mar.	796	260	27 Oct.	873
21	10 Dec.	641	101	24 July	719	181	5 Mar.	797	261	16 Oct.	874
22	30 Nov.	642	102	12 July	720	182	22 Feb.	798	262	6 Oct.	875
23	19 Nov.	643	103	1 July	721	183	12 Feb.	799	263	24 Sept.	876
24	7 Nov.	644	104	21 June	722	184	1 Feb.	800	264	13 Sept	877
25	28 Oct.	645	105	10 June	723	185	20 Jan.	801	265	3 Sept.	878
26	17 Oct.	646	106	29 May	724	186	10 Jan.	802	266	23 Aug.	879
27	7 Oct.	647	107	19 May	725	187	30 Dec.	802	267	12 Aug.	880
28	25 Sept.	648	108	8 May	726	188	20 Dec.	803	268	1 Aug.	881
29	14 Sept.	649	109	28 Apr.	727	189	8 Dec.	804	269	21 July	882
30	4 Sept.	650	110	16 Apr.	728	190	27 Nov.	805	270	11 July	883
31	24 Aug.	651	111	5 Apr.	729	191	17 Nov.	806	271	29 June	884
32	12 Aug.	652	112	26 Mar.	730	192	6 Nov.	807	272	18 June	885
33	2 Aug.	653	113	15 Mar.	731	193	25 Oct.	808	273	8 June	886
34	22 July	654	114	3 Mar.	732	194	15 Oct.	809	274	28 May	887
35	11 July	655	115	21 Feb.	733	195	4 Oct.	810	275	16 May	888
36	30 June	656	116	10 Feb.	734	196	23 Sept.	811	276	6 May	889
37	19 June	657	117	31 Jan	735	197	12 Sept.	812	277	25 Apr.	890
38	9 June	658	118	20 Jan	736	198	1 Sept.	813	278	15 Apr.	891
39	29 May	659	119	8 Jan.	737	199	22 Aug.	814	279	3 Apr.	892
40	17 May	660	120	29 Dec.	737	200	11 Aug.	815	280	23 Mar.	893
41	7 May	661	121	18 Dec.	738	201	30 July	816	281	13 Mar.	894
42	26 Apr.	662	122	7 Dec.	739	202	20 July	817	282	2 Mar.	895
43	15 Apr.	663	123	26 Nov.	740	203	9 July	817	283	19 Feb.	896
44	4 Apr.	664	124	15 Nov.	741	204	28 June	819	284	8 Feb.	897
45	24 Mar.	665	125	4 Nov.	742	205	17 JUne	820	285	28 Jan.	898
46	13 Mar.	666	126	25 Oct.	743	206	6 June	821	286	17 Jan.	899
47	3 Mar.	667	127	13 Oct.	744	207	27 May	822	287	7 Jan	900
48	20 Feb.	668	128	3 Oct.	745	208	16 May	823	288	26 Dec.	900
49	9 Feb.	669	129	22 Sept.	746	209	4 May	824	289	16 Dec.	901
50	29 Jan.	670	130	11 Sept.	747	210	24 Apr.	825	290	5 Dec.	902
51	18 Jan.	671	131	31 Aug.	748	211	13 Apr.	826	291	24 Nov.	903
52	8 Jan.	672	132	20 Aug.	749	212	2 Apr.	827	292	13 Nov.	904
53	27 Dec.	672	133	9 Aug.	750	213	22 Mar.	828	293	2 Nov.	905
54	16 Dec.	673	134	30 July	751	214	11 Mar.	829	294	22 Oct.	906
55	6 Dec.	674	135	18 July	752	215	25 Feb.	830	295	12 Oct.	907
56	25 Nov.	675	136	7 July	753	216	18 Feb.	831	296	30 Sept.	908
57	14 Nov.	676	137	27 June	754	217	7 Feb.	832	297	20 Sept.	909
58	3 Nov.	677	138	16 June	755	218	27 Jan.	833	298	9 Sept.	910
59	23 Oct.	678	139	5 June	756	219	16 Jan.	834	299	29 Aug.	911
60	13 Oct.	679	140	25 May	757	220	5 Jan.	835	300	18 Aug.	912
61	1 Oct.	680	141	14 May	758	221	26 Dec.	835	301	7 Aug.	913
62	20 Sept.	681	142	4 May	759	222	14 Dec.	836	302	27 July	914
63	10 Sept.	682	143	22 Apr.	760	223	3 Dec.	837	303	17 July	915
64	30 Aug.	683	144	11 Apr.	761	224	23 Nov.	838	304	5 July	916
65	18 Aug.	684	145	1 Apr.	762	225	12 Nov.	839	305	24 June	917
66	8 Aug.	685	146	21 Mar.	763	226	31 Oct.	840	306	14 June	918
67	28 July	686	147	10 Mar.	764	227	21 Oct.	841	307	3 June	919
68	18 July	687	148	27 Feb.	765	228	10 Oct.	842	308	23 May	920
69	6 July	688	149	16 Feb.	766	229	30 Sept.	843	309	12 May	921
70	25 June	689	150	6 Feb.	767	230	18 Sept.	844	310	1 May	922
71	15 June	690	151	26 Jan.	768	231	7 Sept.	845	311	21 Apr.	923
72	4 June	691	152	14 Jan.	769	232	28 Aug.	846	312	9 Apr.	924
73	23 May	692	153	4 Jan.	770	233	17 Aug.	847	313	29 Mar.	925
74	13 May	693	154	24 Dec.	770	234	5 Aug.	848	314	19 Mar.	926
75	2 May	694	155	13 Dec.	771	235	26 July	849	315	8 Mar.	927
76	21 Apr.	695	156	2 Dec.	772	236	15 July	850	316	25 Feb.	928
77	10 Apr.	696	157	21 Nov.	773	237	5 July	851	317	14 Feb.	929
78	30 Mar.	697	158	11 Nov.	774	238	23 June	852	318	3 Feb.	930
79	20 Mar.	698	159	31 Oct.	775	239	12 June	853	319	24 Jan.	931
80	9 Mar.	699	160	19 Oct.	776	240	2 June	854	320	13 Jan.	932

HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR
321	1 Jan.	933	401	15 Aug.	1010	481	27 Mar.	1088	561	7 Nov.	1165
322	22 Dec.	933	402	4 Aug.	1011	482	16 Mar.	1089	562	28 Oct.	1166
323	11 Dec.	934	403	23 July	1012	483	6 Mar.	1090	563	17 Oct.	1167
324	30 Nov.	935	404	13 July	1013	484	23 Feb.	1091	564	5 Oct.	1168
325	19 Nov.	936	405	3 July	1014	485	12 Feb.	1092	565	25 Sept.	1169
326	8 Nov.	937	406	21 June	1015	486	1 Feb.	1093	566	14 Sep.	1170
327	29 Oct.	938	407	10 June	1016	487	21 Jan.	1094	567	4 Sep.	1171
328	18 Oct.	939	408	30 May	1017	488	11 Jan	1095	568	23 Aug.	1172
329	6 Oct.	940	409	20 May	1018	489	31 Dec.	1095	569	12 Aug.	1173
330	26 Sept.	941	410	9 May	1019	490	19 Dec.	1096	570	2 Aug.	1174
331	15 Sept.	942	411	27 Apr.	1020	491	9 DEc.	1097	571	22 July	1175
332	4 Sept.	943	412	17 Apr.	1021	492	28 Nov.	1098	572	10 July	1176
333	24 Aug.	944	413	6 Apr.	1022	493	17 Nov.	1099	573	30 June	1177
334	13 Aug.	945	414	26 Mar.	1023	494	6 Nov.	1100	574	19 June	1178
335	2 Aug.	946	415	15 Mar.	1024	495	26 Oct.	1101	575	8 June	1179
336	23 July	947	416	4 Mar.	1025	496	15 Oct.	1102	576	28 May	1180
337	11 July	948	417	22 Feb.	1026	497	5 Oct.	1103	577	17 May	1181
338	1 July	949	418	11 Feb.	1027	498	23 Sept.	1104	578	7 May	1182
339	20 June	950	419	31 Jan.	1028	499	13 Sept.	1105	579	26 Apr.	1183
340	9 June	951	420	20 Jan.	1029	500	2 Sept.	1106	580	14 Apr.	1184
341	29 May	952	421	9 Jan.	1030	501	22 Aug.	1107	581	4 Apr.	1185
342	18 May	953	422	29 Dec.	1030	502	11 Aug.	1108	582	24 Mar.	1186
343	7 May	954	423	19 Dec.	1031	503	31 July	1109	583	13 Mar.	1187
344	27 Apr.	955	424	7 Dec.	1032	504	20 July	1110	584	2 Mar.	1188
345	15 Apr.	956	425	26 Nov.	1033	505	10 July	1111	585	19 Feb.	1189
346	4 Apr.	957	426	16 Nov.	1034	506	28 June	1112	586	8 Feb.	1190
347	25 Mar.	958	427	5 Nov.	1035	507	18 June	1113	587	29 Jan.	1191
348	14 Mar.	959	428	25 Oct.	1036	508	7 June	1114	588	18 Jan	1192
349	3 Mar.	960	429	14 Oct.	1037	509	27 May	1115	589	7 Jan.	1193
350	20 Feb.	961	430	3 Oct.	1038	510	16 May	1116	590	27 Dec.	1193
351	7 Aug.	962	431	23 Sept.	1039	511	5 May	1117	591	16 Dec.	1194
352	30 Jan.	963	432	11 Sept.	1040	512	24 Apr.	1118	592	6 Dec.	1195
353	19 Jan.	964	433	31 Aug.	1041	513	14 Apr.	1119	593	24 Nov.	1196
354	7 Jan.	965	434	21 Aug.	1042	514	2 Apr.	1120	594	13 Nov.	1197
355	28 Dec.	965	435	10 Aug.	1043	515	22 Mar.	1121	595	3 Nov.	1198
356	17 Dec.	966	436	29 July	1044	516	12 Mar.	1122	596	23 Oct.	1199
357	7 Dec.	967	437	19 July	1045	517	1 Mar.	1123	597	12 Oct.	1200
358	25 Nov.	968	438	8 July	1046	518	19 Feb.	1124	598	1 Oct.	1201
359	14 Nov.	969	439	28 June	1047	519	7 Feb.	1125	599	20 Sept.	1202
360	4 Nov.	970	440	16 June	1048	520	27 Jan.	1126	600	10 Sept.	1203
361	24 Oct.	971	441	5 June	1049	521	17 Jan.	1127	601	29 Aug.	1204
362	12 Oct.	972	442	26 May	1050	522	6 Jan	1128	602	18 Aug.	1205
363	2 Oct.	973	443	15 May	1051	523	25 DEc.	1128	603	8 Aug.	1206
364	21 Sept.	974	444	3 May	1052	524	15 Dec.	1129	604	28 July	1207
365	10 Sept.	975	445	23 Apr.	1053	525	4 Dec.	1130	605	16 July	1208
366	30 Aug.	976	446	12 Apr.	1054	526	23 Nov.	1131	606	6 July	1209
367	19 Aug.	977	447	2 Apr.	1055	527	12 Nov.	1132	607	25 June	1210
368	9 Aug.	978	448	21 Mar.	1056	528	1 Nov.	1133	608	15 June	1211
369	29 July	979	449	10 Mar.	1057	529	22 Oct.	1134	609	3 June	1212
370	17 July	980	450	28 Feb.	1058	530	11 Oct.	1135	610	23 May	1213
371	7 July	981	451	17 Feb.	1059	531	29 Oct.	1136	611	13 May	1214
372	26 June	982	452	6 Feb.	1060	532	19 Sept.	1137	612	2 May	1215
373	15 June	983	453	26 Jan.	1061	533	8 Sept.	1138	613	20 Apr.	1216
374	4 June	984	454	15 Jan.	1062	534	28 Aug.	1139	614	10 Apr.	1217
375	24 May	985	455	4 Jan.	1063	535	17 Aug.	1140	615	13 Mar.	1218
376	13 May	986	456	25 Dec.	1063	536	6 Aug.	1141	616	19 Mar.	1219
377	3 May	987	457	13 Dec.	1064	537	27 July	1142	617	8 Mar.	1220
378	21 Apr.	988	458	3 Dec.	1065	538	16 July	1143	618	25 Feb.	1221
379	11 Apr.	989	459	22 Nov.	1066	539	4 July	1144	619	15 Feb.	1222
380	31 Mar	990	460	11 Nov.	1067	540	24 June	1145	620	4 Feb.	1223
381	20 Mar.	991	461	31 Oct.	1068	541	13 June	1146	621	24 Jan.	1224
382	9 Mar.	992	462	20 Oct.	1069	542	2 June	1147	622	13 Jan.	1225
383	26 Feb.	993	463	9 Oct.	1070	543	22 May	1148	623	2 Jan.	1226
384	15 Feb.	994	464	29 Sept.	1071	544	11 May	1149	624	22 Dec.	1226
385	5 Feb.	995	465	17 Sept.	1072	545	30 Apr.	1150	625	12 DEc.	1227
386	25 Jan.	996	466	6 Sept.	1073	546	20 Apr.	1151	626	13 Nov.	1228
387	14 Jan.	997	467	27 Aug.	1074	547	8 Apr.	1152	627	20 Nov.	1229
388	3 Jan.	998	468	16 Aug.	1075	548	27 Mar.	1153	628	9 Nov.	1230
389	23 Dec.	998	469	5 Aug.	1076	549	18 Mar.	1154	629	29 Oct.	1231
390	13 Dec.	999	470	25 July	1077	550	7 Mar.	1155	630	18 Oct.	1232
391	1 Dec.	1000	471	14 July	1078	551	25 Feb.	1156	631	7 Oct.	1233
392	20 Nov.	1001	472	4 July	1079	552	13 Feb.	1157	632	26 Sept.	1234
393	10 Nov.	1002	473	22 June	1080	553	2 Feb.	1158	633	16 Sept.	1235
394	30 Oct.	1003	474	11 June	1081	554	23 Jan.	1159	634	4 Sept.	1236
395	18 Oct.	1004	475	1 June	1082	555	12 Jan.	1160	635	24 Aug.	1237
396	8 Oct.	1005	476	21 May	1083	556	31 Dec.	1160	636	14 Aug.	1238
397	27 Sept.	1006	477	10 May	1084	557	21 Dec.	1161	637	3 Aug.	1239
398	17 Sept.	1007	478	29 Apr.	1085	558	10 Dec.	1162	638	23 Jyly	1240
399	5 Sept.	1008	479	18 Apr.	1086	559	30 Nov.	1163	639	12 July	1241
400	25 Aug.	1009	480	8 Apr.	1087	560	18 Nov.	1164	640	1 July	1242

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641	21 June	1243	721	31 Jan.	1321	801	13 Sept.	1398	881	26 Apr.	1476
642	9 June	1244	722	20 Jan.	1322	802	3 Sept.	1399	882	15 Apr.	1477
643	29 May	1245	723	10 Jan.	1323	803	22 Aug.	1400	883	4 Apr.	1478
644	19 May	1246	724	30 Dec.	1323	804	11 Aug.	1401	884	25 Mar.	1479
645	8 May	1247	725	18 Dec.	1324	805	1 Aug.	1402	885	13 Mar.	1480
646	26 Apr.	1248	726	8 Dec.	1325	806	21 July	1403	886	2 Mar.	1481
647	16 Apr.	1249	727	27 Nov.	1326	807	10 July	1404	887	20 Feb.	1482
648	5 Apr.	1250	728	17 Nov.	1327	808	29 June	1405	888	9 Feb.	1483
649	26 Mar.	1251	729	5 Nov.	1328	809	18 June	1406	889	30 Jan.	1484
650	14 Mar.	1252	730	25 Oct.	1329	810	8 June	1407	890	18 Jan.	1485
651	3 Mar.	1253	731	15 Oct.	1330	811	27 May	1708	891	7 Jan.	1486
652	21 Feb.	1254	732	4 Oct.	1331	812	16 May	1409	892	28 Dec.	1487
653	10 Feb.	1255	733	22 Sep.	1332	813	6 May	1410	893	17 Dec.	1488
654	30 Jan.	1256	734	12 Sep.	1333	814	25 Apr.	1411	894	5 Dec.	1488
655	19 Jan.	1257	735	1 Sept.	1334	815	13 Apr.	1412	895	25 Nov.	1489
656	8 Jan	1258	736	21 Aug.	1335	816	3 Apr.	1413	896	14 Nov.	1490
657	29 Dec.	1258	737	10 Aug.	1336	817	23 Mar.	1414	897	4 Nov.	1491
658	18 Dec.	1259	738	30 July	1337	818	13 Mar.	1415	898	23 Oct.	1492
659	6 Dec.	1260	739	20 July	1338	819	1 Mar.	1416	899	12 Oct.	1493
660	26 Nov.	1261	740	9 July	1339	820	18 Feb.	1417	900	2 Oct.	1494
661	15 Nov.	1262	741	27 June	1340	821	8 Feb.	1418	901	21 Sept.	1495
662	4 Nov.	1263	742	17 June	1341	822	28 Jan.	1419	902	9 Sept.	1496
663	24 Oct.	1264	743	6 June	1342	823	17 Jan.	1420	903	30 Aug.	1497
664	13 Oct.	1265	744	26 May	1343	824	6 Jan.	1421	904	19 Aug.	1498
665	2 Oct.	1266	745	15 may	1344	825	26 Dec.	1421	905	8 Aug.	1499
666	22 Sept.	1267	746	4 May	1345	826	15 Dec.	1422	906	28 July	1500
667	10 Sept.	1268	747	24 Apr.	1346	827	5 Dec.	1423	907	17 July	1501
668	31 Aug.	1269	748	13 Apr.	1347	828	23 Nov.	1424	908	7 July	1502
669	29 Aug.	1270	749	1 Apr.	1348	829	13 Nov.	1425	909	26 June	1503
670	9 Aug.	1271	750	22 Mar.	1349	830	2 Nov.	1426	910	14 June	1504
671	29 July	1272	751	11 Mar.	1350	831	22 Oct.	1427	911	4 June	1505
672	18 July	1273	752	28 Feb.	1351	832	11 Oct.	1428	912	24 May	1506
673	7 July	1274	753	18 Feb.	1352	833	30 Sept.	1429	913	13 May	1507
674	27 June	1275	754	6 Feb.	1353	834	19 Sept.	1430	914	2 May	1508
675	15 June	1276	755	26 Jan.	1354	835	9 Sept	1431	915	21 Apr.	1509
676	4 June	1277	756	16 Jan.	1355	836	28 Agu.	1432	916	10 Apr.	1510
677	25 May	1278	757	5 Jan.	1356	837	18 Aug.	1433	917	31 Mar.	1511
678	14 May	1279	758	25 Dec.	1356	838	7 Aug.	1434	918	19 Mar.	1512
679	3 May	1280	759	15 Dec.	1357	839	27 July	1435	919	9 Mar.	1513
680	22 Apr.	1281	760	3 Dec.	1358	840	16 July	1436	920	26 Feb.	1514
681	11 Apr.	1282	761	23 Nov.	1359	841	5 July	1437	921	15 Feb.	1515
682	1 Apr.	1283	762	11 Nov.	1360	842	24 June	1438	922	5 Feb.	1516
683	20 Mar.	1284	763	31 Oct.	1361	843	14 June	1439	923	24 Jan.	1517
684	9 Mar.	1285	764	21 Oct.	1362	844	2 June	1440	924	13 Jan.	1518
685	27 Feb.	1286	765	10 Oct.	1363	845	22 May	1441	925	3 Jan.	1519
686	16 Feb.	1287	766	28 Sept.	1364	846	12 May	1442	926	23 Dec.	1519
687	6 Feb.	1288	767	18 Sept.	1365	847	1 May	1443	927	12 Dec.	1520
688	25 Jan.	1289	768	7 Sep.	1366	848	20 Apr	1444	928	1 Dec.	1521
689	14 Jan.	1290	769	28 Aug.	1367	849	9 Apr.	1445	929	20 Nov.	1522
690	4 Jan.	1291	770	16 Aug.	1368	850	29 Mar.	1446	930	10 Nov.	1523
691	24 Dec.	1291	771	5 Aug.	1369	851	19 Mar.	1447	931	29 Oct.	1524
692	12 Dec.	1292	772	26 July	1370	852	7 Mar.	1448	932	18 Oct.	1525
693	2 Dec.	1293	773	15 July	1371	853	24 Feb.	1449	933	8 Oct.	1526
694	21 Nov.	1294	774	3 July	1372	854	14 Feb.	1450	934	27 Oct.	1527
695	10 Nov.	1295	775	23 June	1373	855	3 Feb.	1451	935	15 Sept.	1528
696	30 Oct.	1296	776	12 June	1374	856	23 Jan.	1452	937	5 Sept.	1529
697	19 Oct.	1297	777	2 June	1375	857	12 Jan.	1453	937	25 Aug.	1530
698	9 Oct.	1298	778	21 May	1376	858	1 Jan.	1454	938	15 Aug.	1531
699	28 Sept.	1299	779	10 May	1377	859	22 Dec.	1454	939	3 Aug.	1532
700	16 Sept.	1300	780	30 Apr.	1378	860	11 Dec.	1455	940	23 July	1533
701	5 Sept.	1301	781	19 Apr.	1379	861	29 Nov.	1456	941	13 July	1534
702	26 Aug.	1302	782	7 Apr.	1380	862	19 Nov.	1457	942	2 July	1535
703	15 Aug.	1303	783	21 Mar.	1381	863	8 Nov.	1458	943	20 June	1536
704	4 Aug.	1304	784	17 Mar.	1382	864	28 Oct.	1459	944	10 June	1537
705	24 July	1305	785	6 Mar.	1383	865	17 Oct.	1460	945	30 May	1538
706	13 July	1306	786	24 Feb.	1384	866	6 Oct.	1461	946	19 May	1539
707	3 July	1307	787	12 Feb.	1385	867	26 Sept.	1462	947	8 May	1540
708	21 June	1308	788	2 Feb.	1386	868	15 Sept.	1463	948	27 Apr.	1541
709	11 June	1309	789	22 Jan.	1387	869	3 Sept.	1464	949	17 Apr.	1542
710	31 May	1310	790	11 Jan.	1388	870	23 Aug.	1465	950	6 Apr.	1543
711	20 May	1311	791	31 Dec.	1388	871	13 Aug.	1466	951	25 Mar.	1544
712	9 May	1312	792	20 Dec.	1389	872	2 Aug.	1467	952	15 Mar.	1545
713	28 Apr.	1313	793	9 Dec.	1390	873	22 July	1468	953	4 Mar.	1546
714	17 Apr.	1314	794	29 Nov.	1391	874	11 July	1469	954	21 Feb.	1547
715	7 Apr.	1315	795	17 Nov.	1392	875	30 June	1470	955	11 Feb.	1548
716	26 Mar.	1316	796	6 Nov.	1393	876	20 June	1471	956	30 Jan.	1549
717	16 Mar.	1317	797	27 Oct.	1394	877	8 June	1472	957	20 Jan.	1550
718	5Mar.	1318	798	16 Oct.	1395	878	29 May	1473	958	9 Jan.	1551
719	22 Feb.	1319	799	5 Oct.	1396	879	18 May	1474	959	29 Dec.	1551
720	12 Feb.	1320	800	24 Sept.	1397	880	7 May	1475	960	18 Dec.	1552

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961	7 Dec.	1553	1041	30 July	1631	1121	13 Mar.	1709	1201	24 Oct.	1786
962	26 Nov.	1554	1042	19 July	1632	1122	2 Mar.	1710	1202	13 Oct.	1787
963	16 Nov.	1555	1043	8 July	1633	1123	19 Feb.	1711	1203	2 Oct.	1788
964	4 Nov.	1556	1044	27 June	1634	1124	9 Feb.	1712	1204	21 Sept.	1789
965	24 Oct.	1557	1045	17 June	1635	1125	28 Jan.	1713	1205	10 Sept.	1790
966	14 Oct.	1558	1046	5 June	1636	1126	17 Jan.	1714	1206	31 Aug.	1791
967	3 Oct.	1559	1047	26 May	1637	1127	7 Jan.	1715	1207	19 Aug.	1792
968	22 Sept.	1560	1048	15 May	1638	1128	27 Dec.	1716	1208	9 Aug.	1793
969	11 Sept.	1561	1049	4 May	1639	1129	16 Dec.	1716	1209	29 July	1794
970	31 Aug.	1562	1050	23 Apr.	1640	1130	5 Dec.	1717	1210	18 July	1795
971	21 Aug.	1563	1051	12 Apr.	1641	1131	24 Nov.	1718	1211	7 July	1796
972	9 Aug.	1564	1052	1 Apr.	1642	1132	14 Nov.	1719	1212	26 June	1797
973	29 July	1565	1053	22 Mar.	1643	1133	2 Nov.	1720	1213	15 June	1798
974	19 July	1566	1054	10 Mar.	1644	1134	22 Oct.	1721	1214	5 June	1799
975	8 July	1567	1055	27 Feb.	1645	1135	12 Oct.	1722	1215	25 May	1800
976	26 June	1568	1056	17 Feb.	1646	1136	1 Oct.	1723	1216	14 May	1801
977	16 June	1569	1057	6 Feb.	1647	1137	20 Sept.	1724	1217	4 May	1802
978	5 June	1570	1058	27 Jan.	1648	1138	9 Sept.	1725	1218	23 Apr.	1803
979	26 May	1571	1059	15 Jan.	1649	1139	29 Aug.	1726	1219	12 Apr.	1804
980	14 May	1572	1060	4 Jan.	1650	1140	19 Aug.	1727	1220	1 Apr.	1805
981	3 May	1573	1061	25 Dec.	1650	1141	7 Aug.	1728	1221	21 Mar.	1806
982	23 Apr.	1574	1062	14 Dec.	1651	1142	27 July	1729	1222	11 Mar.	1807
983	12 Apr.	1575	1063	2 Dec.	1652	1143	17 July	1730	1223	28 Feb.	1808
984	31 Mar.	1576	1064	22 Nov.	1653	1144	6 July	1731	1224	16 Feb.	1809
985	21 Mar.	1577	1065	11 Nov.	1654	1145	24 June	1732	1225	6 Feb.	1810
986	10 Mar.	1578	1066	31 Oct.	1655	1146	14 June	1733	1226	26 Jan.	1811
987	28 Feb.	1579	1067	20 Oct.	1656	1147	3 June	1734	1227	16 Jan.	1812
988	17 Feb.	1580	1068	9 Oct.	1657	1148	24 May	1735	1228	4 Jan.	1813
989	5 Feb.	1581	1069	29 Sept.	1658	1149	12 May	1736	1229	24 Dec.	1213
990	26 Jan.	1582	1070	18 Sept.	1659	1150	1 May	1737	1230	14 Dec.	1814
991	25 Jan.	1583	1071	6 Sept.	1660	1151	21 Apr.	1738	1231	3 Dec.	1815
992	14 Jan	1584	1072	27 Aug.	1661	1152	10 Apr.	1739	1232	21 Nov.	1816
993	3 Jan.	1585	1073	16 Aug.	1662	1153	29 Mar.	1740	1233	11 Nov.	1817
994	23 Dec.	1585	1074	5 Aug.	1663	1154	19 Mar.	1741	1234	31 Oct.	1818
995	12 Dec.	1586	1075	25 July	1664	1155	8 Mar.	1742	1235	20 Oct.	1819
996	2 Dec.	1587	1076	14 July	1665	1156	25 Feb.	1743	1236	9 Oct.	1820
997	20 Nov.	2588	1077	4 July	1666	1157	15 Feb.	1744	1237	28 Sept.	1821
998	10 Nov.	1589	1078	23 June	1667	1158	3 Feb.	1745	1238	18 Sept.	1822
999	30 Oct.	1590	1079	11 June	1668	1159	24 Jan	1746	1239	7 Sept.	1823
1000	19 Oct.	1591	1080	1 June	1669	1160	13 Jan.	1747	1240	26 Aug.	1824
1001	8 Oct.	1592	1081	21 May	1670	1161	2 Jan.	1748	1241	16 Aug.	1825
1002	27 Sept.	1593	1082	10 May	1671	1162	22 Dec.	1748	1242	5 Aug.	1826
1003	16 Sept.	1594	1083	29 Apr.	1672	1163	11 Dec.	1749	1243	25 July	1827
1004	6 Sept.	1595	1084	18 Apr.	1673	1164	30 Nov.	1750	1244	14 July	1828
1005	28 Aug.	1596	1085	7 Apr.	1674	1165	20 Nov.	1751	1245	3 July	1829
1006	14 Aug.	1597	1086	28 Mar.	1675	1166	8 Nov.	1752	1246	22 June	1831
1007	4 Aug.	1598	1087	16 Mar.	1976	1167	29 Oct.	1753	1247	12 June	1831
1008	24 July	1599	1088	6 Mar.	1677	1168	18 Oct.	1754	1248	31 May	1832
1009	13 July	1600	1089	23 Feb.	1678	1169	7 Oct.	1755	1249	21 May	1833
1010	2 July	1601	1090	12 Feb	1679	1170	26 Sept.	1756	1250	10 May	1834
1011	21 June	1602	1091	2 Feb.	1680	1171	15 Sept.	1757	1251	29 Apr.	1835
1012	11 June	1603	1092	21 Jan.	1681	1172	4 Sept.	1758	1252	18 Apr.	1836
1013	30 May	1604	1093	10 Jan.	1682	1173	25 Aug.	1759	1253	7 Apr.	1837
1014	19 May	1605	1094	31 Dec.	1682	1174	13 Aug.	1760	1254	27 Mar.	1838
1015	9 May	1606	1095	20 Dec.	1683	1175	2 Aug.	1761	1255	17 Mar.	1839
1016	28 Apr.	1607	1096	8 Dec.	1684	1176	23 July	1762	1256	5 Mar.	1840
1017	17 Apr.	1608	1097	28 Nov.	1685	1177	12 July	1763	1257	23 Feb.	1841
1018	6 Apr.	1609	1098	17 Nov.	1686	1178	1 July	1764	1258	12 Feb.	1842
1019	26 Mar.	1610	1099	7 Nov.	1687	1179	20 June	1765	1259	1 Feb.	1843
1020	16 Mar.	1611	1100	26 Oct.	1688	1180	9 June	1766	1260	22 Jan.	1844
1021	4 Mar.	1612	1101	15 Oct.	1689	1181	30 May	1767	1261	10 Jan.	1845
1022	21 Feb.	1613	1102	5 Oct.	1690	1182	18 May	1768	1262	30 Dec.	1845
1023	11 Feb.	1614	1103	24 Sept.	1691	1183	7 May	1769	1263	20 Dec.	1846
1024	31 Jan.	1615	1104	12 Sept.	1692	1184	27 Apr.	1170	1264	9 Dec.	1847
1025	20 Jan.	1616	1105	2 Sept.	1693	1185	16 Apr.	1171	1265	27 Nov.	1848
1026	9 Jan	1617	1106	22 Aug.	1694	1186	4 Apr.	1772	1266	17 Nov.	1849
1027	29 Dec.	1617	1107	12 Aug.	1695	1187	25 Mar.	1773	1267	6 Nov.	1850
1028	19 Dec.	1618	1108	31 July	1696	1188	14 Mar.	1774	1268	27 OCt.	1851
1029	8 Dec.	1619	1109	20 July	1697	1189	4 Mar.	1775	1269	15 Oct.	1852
1030	26 Nov	1620	1110	10 July	1698	1190	21 Feb.	1776	1270	4 Oct.	1853
1031	16 Nov.	1621	1111	29 June	1699	1191	19 Feb.	1777	1271	24 Sept.	1854
1032	5 Nov.	1622	1112	18 June	1700	1192	30 Jan.	1778			
1033	25 Oct.	1623	1113	8 June	1701	1193	19 Jan.	1779			
1034	14 Oct.	1624	1114	28 May	1702	1194	8 Jan.	1780			
1035	3 Oct.	1625	1115	17 May	1703	1195	28 Dec	1780			
1036	22 Sept.	1626	1116	6 May	1704	1196	17 Dec.	1781			
1037	12 Sept	1627	1117	25 Apr.	1705	1197	7 Dec.	1782			
1038	31 Aug.	1628	1118	15 Apr.	1706	1198	26 Nov.	1783			
1039	21 Aug.	1629	1119	4 Apr	1707	1199	14 Nov.	1784			
1040	10 Aug.	1630	1120	23 Mar.	1708	1200	4 Nov.	1785			

HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR	HEGIRA YEAR	DAY/MO.	GREGORIAN YEAR
1272	13 Sept.	1855	1310	26 July	1892	1348	9 June	1929	1386	22 Apr.	1966
1273	1 Sept.	1856	1311	15 July	1893	1349	29 May	1830	1387	11 Apr.	1967
1274	22 Aug.	1857	1312	5 July	1894	1350	19 May	1931	1388	31 May	1968
1275	11 Aug.	1858	1313	24 June	1895	1351	7 May	1932	1389	20 Mar.	1969
1276	31 July	1859	1314	12 June	1896	1352	26 Apr.	1933	1390	9 Mar.	1970
1277	20 July	1860	1315	2 June	1897	1353	16 Apr.	1934	1391	27 Feb.	1971
1278	9 July	1861	1316	22 May	1899	1354	5 Apr.	1935	1392	16 Feb.	1972
1279	29 June	1862	1317	12 May	1899	1355	24 Mar.	1936	1393	4 Feb.	1973
1280	18 June	1863	1318	1 May	1900	1356	14 Mar.	1937	1394	25 Jan.	1974
1281	6 June	1864	1319	20 May	1901	1357	3 Mar.	1938	1395	14 Jan.	1975
1282	27 May	1865	1320	10 Apr.	1902	1358	21 Feb.	1939	1396	3 Jan.	1976
1283	16 May	1866	1321	30 Mar.	1903	1359	10 Feb.	1940	1397	23 Dec.	1976
1284	5 May	1867	1322	18 Mar.	1904	1360	29 Jan.	1941	1398	12 Dec.	1977
1285	24 Apr.	1868	1323	8 Mar.	1905	1361	19 Jan.	1942	1399	2 Dec.	1978
1286	13 Apr.	1869	1324	25 Feb.	1906	1362	8 Jan.	1943	1400	21 Nov.	1979
1287	3 Apr.	1870	1325	14 Feb.	1907	1363	28 Dec.	1943	1401	9 Nov.	1980
1288	23 Mar.	1871	1326	4 Feb.	1908	1364	17 Dec.	1944	1402	30 Oct.	1981
1289	11 Mar.	1872	1327	23 Jan.	1909	1365	6 Dec.	1945	1403	19 Oct.	2982
1290	1 Mar.	1873	1328	13 Jan.	1910	1366	25 Nov.	1946	1404	8 Oct.	1983
1291	18 Feb.	1874	1329	2 Jan.	1911	1367	15 Nov.	1947	1405	27 Sept.	1984
1292	7 Feb.	1875	1330	22 Dec.	1911	1368	3 NOv.	1948	1406	16 Sept.	1985
1293	26 Jan.	1876	1331	11 Dec.	1912	1369	24 Oct.	1949	1407	6 Sept.	1986
1294	16 Jan.	1877	1332	30 Nov.	1913	1370	13 Oct.	1950	1408	26 Aug.	1987
1295	5 Jan.	1878	1333	22 Nov.	1914	1371	2 Oct.	1951	1409	14 Aug.	1988
1296	26 Dec.	1878	1334	9 Nov.	1915	1372	21 Sept.	1952	1410	4 Aug.	1989
1297	15 Dec.	1879	1335	28 Oct.	1916	1373	10 Sept.	1953	1411	24 July	1990
1298	4 Dec.	1880	1336	17 Oct.	1917	1374	30 Aug.	1954	1412	13 July	1991
1299	23 Nov.	1881	1337	7 Oct.	1918	1375	20 Aug.	1955	1413	2 July	1992
1300	12 Nov.	1882	1338	26 Sept.	1919	1376	8 Aug.	1956	1414	21 June	1993
1301	2 Nov.	1883	1339	15 Sept.	1920	1377	29 July	1957	1415	10 June	1994
1302	21 Oct.	1884	1340	4 Sept.	1921	1378	18 July	1958	1416	31 May	1995
1303	10 Oct.	1885	1341	24 Aug.	1922	1379	7 July	1959	1417	19 May	1996
1304	30 Sept.	1886	1342	14 Aug.	1923	1380	25 June	1960	1418	9 May	1997
1305	19 Sept.	1887	1343	2 Aug.	1924	1381	14 June	1961	1419	28 Apr.	1998
1306	7 Sept.	1888	1344	22 July	1925	1382	4 June	1962	1420	17 Apr.	1999
1307	28 Aug.	1889	1345	12 July	1926	1383	25 May	1963	1421	6 Apr.	2000
1308	17 Aug.	1890	1346	1 July	1927	1384	13 May	1964			
1309	7 Aug.	1891	1347	20 June	1928	1385	2 May	1965			

الذي بنعمتـــه تتم الصالحـــات

ALL PRAISE AND THANKS TO ALLAH